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ORIGINAL COMMUNICATIONS.

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A CONSIDERATION OF THE "HERD" THEORY AS AN ETIOLOGICAL FACTOR IN OZENA.*

BY CLEMENT F. THEISEN, M. D., ALBANY, N. Y.

In this paper the writer will limit himself to a consideration of the "Herd" theory as a cause for atrophic rhinitis. Ozena, which, according to its Greek derivation, means really a stench, should not be considered a disease by itself, but rather a symptom of some other underlying pathological process. It seems to the writer that it would be less confusing to speak of all cases in which the characteristic atrophic changes with crust formation are present, as cases of atrophic rhinitis, whatever the cause may be.

In considering the etiology of ozena or atrophic rhinitis from the viewpoint of accessory sinus disease, the "Herd" theory of Gruenwald, Hajek Loehnberg, Michel and others, I, of course, am fully aware that we can only explain a certain percentage of the cases in this way. But I am convinced that a fairly large percentage of ozena cases are associated with disease of the accessory cavities.

I would like briefly to give the results of my own observations: In 1904, in the January number of the Albany Medical Annals, a preliminary report of the results of examinations of the accessory sinuses in ozena cases was given. In this paper the twenty-one cases then reported will be briefly reviewed, and a further report of thirty-nine cases will be given, sixty in all. These were all cases in which the characteristic atrophy of the membrane with crust formation was present.

In eight of the twenty-one cases first reported, positive evidence of sinus disease was found. In four cases, chronic maxillary sinu-

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sitis, in two combined with chronic ethmoiditis existed. In three cases, ethmoiditis existed alone (cases of unilateral atrophic rhinitis), and in one case chronic frontal sinusitis and ethmoiditis. In the three cases in which the ethmoidal cells were found diseased, the atrophic process was practically confined to the middle turbinal body, and in these cases a direct etiological relationship certainly appeared to exist between the ethmoid disease and the localized atrophic changes. These cases were greatly benefitted by curettage of the ethmoid cells.

In the second series of thirty-nine cases, accessory sinus disease was found in six cases. In two cases ethmoid and antral disease was found, in two ethmoid disease alone, in one frontal and ethmoid, and in one ethmoid and sphenoid. In this series of cases also, in the two cases in which ethmoid disease was found, the atrophic process was practically limited to the region of the middle turbinate. The writer's cases then show fourteen cases of accessory sinus disease out of sixty ozena cases, or about twenty-five per cent.

The methods used in arriving at these results were briefly as follows: In every case as thorough an investigation as possible of the accessible sinuses was made. The nostrils of each patient examined were first freed of crusts, and thoroughly washed out, and then transillumination was employed. The maxillary antra in all cases in which the patient's consent could be obtained, were punctured in the usual way through the naso-antral wall and washed out. In the cases in which it was found that antral disease existed, decomposing and usually foul smelling secretions were washed out.

The diagnosis in the cases in which chronic frontal sinusitis was found, was made by transillumination and by washing out the sinus when possible. In one of these cases the radical operation was performed, and a greatly thickened and degenerated membrane with some pus was found. The nasal condition was greatly benefitted by the operation. In one case in which ethmoid disease had been found, a large sequestrum was removed. It was part of the left lateral ethmoid mass. The ethmoid cells were filled with a thick, foul smelling secretion. This patient was probably a syphilitic subject.

Time will not permit me to give a detailed report of every case in which sinus disease was discovered, but it may be of interest to consider one or two of the individual cases.

In the case of Miss S., aged thirty years, a foul-smelling discharge had existed since childhood. In this case ethmoid and sphenoidal sinus disease was present. The atrophic process was so extensive that the sphenoidal sinus could be readily probed.

Several operations were performed with the result that the crust formation and odor have practically disappeared. This patient I have had under observation for many years.

In another case, a boy, aged nine years, there was a history of an attack of nasal diphtheria five years before I saw him. His mother, who contracted the disease from him, stated that from the time he had diphtheria, he had suffered from occlusion of the nostrils, and an offensive yellow discharge. On examination, both nostrils were filled with badly smelling soft crusts, and the typical atrophy was present. When the crusts were removed, pus could be seen in the middle meatal region of both nostrils, and was found to come from the maxillary antra. Cultures were taken from both nostrils and examined in the Albany Bender Laboratory by Drs. Pearce and Winne, who reported that they showed the presence of typical diphtheria bacilli, in conjunction with an organism that was probably Friedlænder's Bacillus mucosus capsulatus. The non-virulency of the organisms was proved by inoculating guinea pigs with pure cultures of the bacilli obtained from the nose. The animals all remained well.

The mother positively stated that the boy's nose had never troubled him before his attack of diphtheria, so that in this case there does not appear to be much doubt that the antral empyema caused by the diphtheria infection was responsible for the typical changes in the nose. It is also of interest that the bacilli were still in the nose after five years.

The majority of the cases of atrophic rhinitis seen by the writer occurred in children and young adults, and in many cases a history of measles, scarlet fever, or diphtheria from which the patients had suffered early in life was obtained. A common statement of the mother or father was that the child had had a yellow discharge and bad smell from the nose off and on since the attack of scarlet fever or diphtheria, and this brings us to what I believe is one of the most important etiological factors in connection with the "Herd" theory of atrophic rhinitis and a strong argument in its favor.

The discharge from the noses of these children, following their infectious disease, was caused by an infection of one or more of

the accessory cavities, and it is a reasonable deduction that in some such cases the mechanical irritation produced by the more or less constant discharge would finally lead to the atrophic changes in the membrane.

The investigations of Pearce are of interest in this connection because they show the frequency of accessory sinus disease as a complication of diphtheria and scarlet fever in early childhood. Pearce examined the accessory sinuses of fifty patients who had died of diphtheria or scarlet fever in the Boston City Hospital. Thirty-nine cases of diphtheria were examined, and in twenty-five, changes in the accessory sinuses were found; both antra in sixteen; both antra, sphenoid and ethmoid sinuses in two; one antra only in five, and the sphenoid sinus only in two. Of the eighteen double antrum cases, the exudate on both sides in three was a thick yellow pus; in three a purulent fluid with membrane, and in one, a cloudy serous fluid with membrane. Five cases of diphtheria with scarlet fever were examined, and in two changes in the antra were found; one was unilateral and contained a thick, yellow pus. Two cases of diphtheria with measles were examined, and both antra in each case contained a sero-purulent fluid. Four cases of scarlet fever were examined, one antrum was normal; in one case there was a double empyema, and in another, both antra and the sphenoid sinus contained greenish pus.

Forty-four of these children were between the ages of two and six years. The fact that cultures from the nose showed the presence of diphtheria bacilli, which in some cases on record persisted for months and years, is of great importance, because in such cases the infection undoubtedly persisted in the sinuses, and it is probable that sinuses so infected would not get well until they were opened and properly treated. Such conditions in very young children would very likely go unrecognized for a long time, and there is no good reason why the more or less constant discharge over the mucous membrane would not finally produce localized atrophic changes. There is no doubt that many of the cases of so-called purulent rhinitis of childhood, belong in this class.

Emil Mayer has also reported a case of purulent antral empyema in a child two and one-half years old, following scarlet fever and diphtheria.

These reports prove the fallacy of the theory advanced by some writers, that cases of atrophic rhinitis reported in very young chil-

dren, could not be secondary to sinus disease because the accessory sinus did not exist so early in life. It is probable that a large percentage of children who have had infectious diseases, have, as a result, a purulent sinusitis, and a certain percentage of them certainly later on have an atrophic rhinitis.

Loehnberg, who at the present time, is perhaps the most enthusiastic advocate of the "Herd" theory, states that he found the accessory cavities diseased in every one of seventy-nine ozena cases, i. e., twenty-four times an empyema of the sphenoid sinus; six times of the frontal; ten times of the ethmoidal cells and thirty-nine times of the maxillary antrum. This is certainly a strong argument in favor of this theory. Alexander quotes the investigations of other authors who reported twenty-two autopsies of atrophic rhinitis cases. The accessory sinuses were diseased in eight of these cases.

Michel believes that ozena depends mainly upon a purulent inflammation of the accessory cavities, particularly the ethmoid cells and sphenoidal sinuses, and Gruenwald also states that a considerable percentage of ozena cases are caused by purulent processes in the accessory cavaties. While Hajek is of this opinion, he does not believe that this alone is sufficient to explain the pathogenesis of the whole clinical picture of ozena.

In conclusion, it appears to the writer that the "Herd" theory offers the most reasonable explanation for a fairly large percentage of atrophic rhinitis cases. None of the other theories, the rarefying osteitis theory, the theory that the atrophic process follows a previous hypertrophy of the membrane, and others too numerous to mention, give a satisfactory explanation for the large amount of secretion necessary to form the large crusts we see in some cases.

The function of the mucous glands must certainly be seriously interfered with when they become destroyed, as they do in severe cases, because microscopical examinations do not show glandular elements in tissue atrophied to the extent that it is in certain advanced cases of atrophic rhinitis. The secretions in many of these cases must come from the neighboring sinuses. If the theory that a rarefying osteitis, producing a shutting off of the blood supply to the mucous membrane, is correct, why should it in some cases produce atrophy, and in others just the oposite condition, oedema and polypoid degeneration of the membrane?

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172 Washington Avenue.

A Case of Vincent's Angina in which the Larynx and Trachea were Involved. H. W. BRUCE. *Lancet*, Oct. 12, 1907.

Describes a case in a man, aged 47, in which Vincent's angina not only involved the fauces, but attacked the mucous membrane of the larynx and trachea. The characteristic bacilli were present in large numbers in smears taken from the slough, but no spirilla were discovered. Laryngeal obstruction necessitated laryngotomy. At the end of five days, although respiration was relieved, the tissues of the neck around the wound were attacked by a sloughing process. The skin and subcutaneous tissues were converted into a gray foetid material; the gangrenous process spread outwards and downwards as far as the clavicle, the lungs became involved; and the patient died eleven days after admission. Post-mortem examination showed sloughing of the uvula. A thin green slough covered the ary-epiglottic folds, the mucous membrane below the false cords, and the trachea almost down to the bifurcation. The author remarks on the unusual features of the case, and compares it with the mild form of phagedaena or hospital gangrene.

THOMSON.

THE PATHOLOGY OF ATROPHIC RHINITIS WITH OZENA.*

BY D. BRADEN KYLE, M. D., PHILADELPHIA.

Much confusion exists in the nomenclature of these two conditions, largely due to the fact that different individuals apply the term "atrophic" to entirely different processes. One thing certain is that there are forms of atrophy peculiar to the nasal mucous membrane, and some of these conditions are associated with ozena. Why do we not have this condition of atrophy in other mucous membranes? This certainly does not exist, and it forces us to the conclusion that either the mucous membrane itself or its function predisposes this membrane to an atrophic change, or changes

Personally, I believe there is no one cause of atrophic rhinitis, but that there are many conditions, both external and internal, that lead to pathological changes in the nasal mucous membrane, which bring about the condition known as atrophy. Seen at different stages, it will be described as a different variety; yet, the ozena which is associated with some cases and not with others, may have its origin in the altered secretion, in the secretion, even, of the glands of the mucous membrane, or may come from an involvement of an accessory cavity. This accessory cavity involvement may be primary, or it may be secondary.

Very few observers have had the opportunity of studying a case from its beginning. It is always developed before the physician sees it. Personally, I have seen many cases of atrophic rhinitis with ozena, in which there was no involvement of the sinus, but in other cases I have observed the ozena was without any atrophy, in which there was involvement of the sinus; so that it brings us to this conclusion: That we may have atrophic change with ozena; we may have atrophic change without ozena; we may have ozena and atrophic change in which there is associated a lesion of the sinus, either primary or secondary. We may also have associated lesions of the sinus with ozena, in which there is no atrophic change in the nasal mucous membrane, and while the process when completed may be the same, yet the causes are different, and no one definite etiological factor can be assigned.

On examination of tissue taken from atrophic cases, in some instances the tissue itself, even after removal, still had the odor so

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peculiar to ozena. This would seem to point to some chemical change in the gland structure. The odor of atrophic rhinitis varies, and I think is due to different causes in different cases. Various bacteria have been found, but the same bacteria can be found in decomposed secretions elsewhere.

The mucous membrane of the accessory cavities secretes very little mucous, and if these cavities are inflamed, then the secretion is not mucous but inflammatory product. The mucous secreted from the nasal mucous membrane under normal physiological conditions does not tend to form crusts and adhere to the mucous membrane. In atrophic rhinitis, with or without ozena, this, however, is the case, showing an altered mucous membrane and altered gland structures, with necessarily altered secretion. That this secretion is altered is proven when an attempt is made to thoroughly cleanse the mucous membrane. This we all know in an atrophic case is practically impossible to do.

Atrophic rhinitis usually begins in childhood, it is very true, and it is possible that the blood supply is sufficient up to a certain period of development, and then, owing to faulty formation, as some of the blood supply comes through bony foramena, these may not develop sufficiently large to allow sufficient nutrition to be carried to the part; hence, the atrophic change.

The general condition plays a great part as an etiological factor. So does heredity. I think, however, that we can sum up the whole condition as follows: That there is not any one etiological factor as a cause of atrophy of the nasal mucous membrane. Second, that the source of the odor in the condition known as ozena has no one origin. Third, that there may or may not be associated sinus lesion, either primary or secondary, to the atrophy or ozena; that we do have an atrophic condition which follows a simple chronic inflammation with contraction, that we do have an atrophic condition due to faulty nutrition from other causes; that we do have an atrophic rhinitis which is truly atrophic change. We may also have an atrophic rhinitis similar to that condition seen in the liver, which is known as red atrophy, in which the membrane, although puffy and cyanotic, is strictly atrophic as to function and cellular structure brought about by venous stasis. No specific bacteria will account for all cases of atrophy of the mucous membrane or all cases of ozena.

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THE TREATMENT OF ATROPHIC RHINITIS, INCLUDING OZENA*

BY ROBERT E. MYLES, M. D., NEW YORK.

For convenience, and a more thorough understanding of its nature, the writer has divided the clinical history of the true or typical atrophic rhinitis into three stages:

First: The mucopurulent stage of childhood.

Second: The incrustation or ozena stage, which develops in patients between four and sixteen years of age, and never afterward in patients observed by the writer.

Third: The adolescent stage, which may be observed from the age of twenty-five to the end of the oldest life.

The proposition that the early or incipient stage is the best one in which to treat a case of tuberculosis, cancer, diphtheria, and numerous other diseases, should hold equally well in atrophic rhinitis. I have never been able to make or to find in recorded literature a complete clinical history of a case of atrophic rhinitis. Bosworth's remarkable and brilliant observations of the symptoms of the first stage of this strange disease have been mostly corroborated by the patient's statements for the author's clinical data. My belief, based upon the best evidence which I have been able to collect from literature and patients, is that it essentially an infectious disease of childhood. Yet I am fully aware that the testimony and proofs are not sufficient to make this belief into a fact.

I was prompted to participate in this symposium by the hope that some of the members of this Section and the Section of Pediatrics could be induced conjointly to colleect some reliable data concerning the first stage of atrophic rhinitis. The task will be difficult, for it must extend over many years.

The writer has considereed nearly every case of bi-lateral perennial suppurative rhinitis in children as a possible atrophic case. He has commenced the treatment by removing whatever obstruction there might be to the breathing, and also by increasing the nasal drainage in any way that might seem expedient. Naturally, the little patients could not be expected to visit a specialist frequently

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throughout a series of years for an almost unnoticeable post-nasal catarrh. Those whom I have seen from time to time and who have been fairly persistent in the home treatment, have so far failed to develop the foetid ozena type. I have been able to follow up only a very limited number of these muco-purulent cases. This would show that all cases of perennial suppurative rhinitis do not terminate after treatment in atrophic rhinitis associated with ozena, but it does not prove that all cases of atrophic rhinitis are not preceded during childhood by perennial muco-purulent rhinitis. I am most anxious to know if any member of this Section has the history of an atrophic case in which there was not a perennial muco-purulent discharge in the rhinopharynx previous to puberty.

The writer has used the alkoline solutions with the pipette and spray—such as Dobell's, Seiler's, or those of chloride or bicarbonate of sodium. It was noticed that they were more efficacious when used quite warm. A weak solution of hydrogen dioxide one in five or ten of water, instilled slowly into the nose, will aid in dislodging the mucous which may be fixed in the crevices and under the turbinals. After the nose has been cleansed according to instructions, the nurse or child is taught to use about one-half of a grain of a powder which is composed of one part of boric acid to two parts of aristol. This is to be insufflated into each nostril with the author's aseptic powder blower, once a day, preferably before retiring. The morning treatment is the same with the alkaline and germicidal solutions and the peroxide, to be followed by the use of either of the following ointments:

R.	Or—	R.
Ichthyol, drams i or drams ii.		Nosophen, grains xxx.
Lanoline, drams ii.		Lanoline, drams ii.
Vaseline alb. ad. oz. i.		Vaseline alb. ad. oz. i.

The best method of introduction discovered so far has been by twisting cotton on a match from end to end; then, covering the non-sulphurus end with the ointment, insert it about one-half to three fourths of an inch within the vestibule. Make firm pressure with the thumb and index finger of the opposite hand on the alae nasi and at the same time gently withdraw the match and cotton. After this, two or three times a day, an abolene spray with one grain each of eucalyptol, acid carbolic and menthol, to the ounce, is used through some reliable atomizer.

These little patients are seen usually at very irregular intervals. Turbinals are reduced when they appear to obstruct the drainage from the accessory sinuses and the fossae. The recesses are cleaned with the cotton applicators, alternately dipped in solutions of various astringents, antiseptics and germicides. I have found a twenty-five to fifty per cent solution of argyrol the least irritating.

We are waiting for the pathologist to give us the pathognomonic evidence of the first tage of atrophic rhinitis, so that we will know when we cure a case. Nearly all that has been written about atrophic rhinitis has been confined chiefly to the second stage, since the crusts and odor of this stage are most manifest and objectionable.

The treatment of the second stage consists of removal of the malodorous crusts, the prevention of their reformation, and operative procedures on the accessory sinuses. The general details of the local, non-operative treatment of this stage have been given so often and so extensively by Dr. Richards and others that I will not detain you by repeating them.

I present some perforated glass tubes made by Van Horn and Sawtell, which have been found safe and satisfactory when attached to a fountain syringe, provided they are moved about during the act of irrigation. The physician should carefully cleanse the nose and rhino-pharynx, and at the same time instruct the patient in a practical manner in all the manipulative details for cleansing and for preventing the formation of crusts of semi-inspissated secretion. Patients should be instructed in the gentle use of the cotton applicators which have been dipped in the ointment or solutions which have been prescribed. They should also be taught how to apply the cotton or gauze tampons, when it is desired to modify or stop the air from passing through the nose. In the cases which show the diphtheria bacillus, I believe that we may expect much benefit from the use of anti-toxin. I have seen several cases which made marked and rapid improvement after the administration of anti-toxin for diphtheria.

I have operated on the sphenoidal, ethmoidal, frontal and antral cells in several cases during the second stage. While decided reduction was noticed in the amount of the secretion and crusts, it was not commensurate with the relief secured in similar cases which were operated on during the third stage. Judging from my experience, I can state that proper operative treatment of the nasal accessory

sinuses, in addition to the local treatment of the other stages, has given me the best general results. When safe and feasible, it has been my effort and custom to make large and permanent openings in the anterior sphenoidal cell walls, ethmoidal cell floors, and antro-nasal walls. This, of course, in cases where secretion flows chiefly from the cells.

In summing up, I will state that my treatment has been directed against a disease which I believe belongs essentially to childhood. The later manifestations of arrest of development and atrophy are more or less the results of mechanical flooding of the parts by a peculiar tenacious secretion. The cause of the secretion, in my opinion, is an infection which only finds a suitable culture soil on the mucoso before the age of puberty.

In the treatment of the second stage, I thoroughly remove all the semi-inspissated secretions which readily undergo degeneration and decomposition and produce a most offensive gas.

The writer has kept some of the crusty formations in corked bottles for several days, and the ordinary stench from atrophic ozena would be considered sweet perfume when compared to the odor from the bottles. Every effort should be made by the patient, under the instruction of a physician, to prevent crust formation, and I advise operations, in favorable cases, on the accessory sinuses.

In the third stage, when the atrophic changes are naturally on the decline, the objectionable features in many cases show signs of a spontaneous abatement and it is in this stage that operations on the accessory sinuses have given the best results. Ozena has disappeared after thorough operations in all cases of syphilitic or suppurative necrosis of the bones, and in cases of putrid debris or degenerative conditions in the respective sinuses.

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THE TREATMENT OF ATROPHIC RHINITIS.*

BY GEORGE L. RICHARDS, M. D., FALL RIVER, MASS.

The treatment of Atrophic Rhinitis must be based somewhat on one's idea of its etiology and pathology. In another sense, however, the treatment is much the same, whatever theory one may have as to its etiology and pathology. There is an atrophy of the gland elements of the interior of the nose from some cause, accompanied by the pouring out of a thick, sticky secretion covering the nasal mucous membrane, the frequent presence of a vile odor, great discomfort and a sense of blocking up of the nose. The whole condition is intensely disagreeable to the patient and his friends and for this he seeks relief. It is evident that what is desired is an increase in the amount of, and a change in the quality of, the gland secretions together with the removal of the prime cause if it can be determined. This will be best brought about by the combined uses of internal and external remedies.

Internal Remedies. These may be divided into two classes: first, those remedies which have been found to have some influence in increasing glandular activity of which iodin is the essential ingredient. Of these, Iodide of Potassium, Syrup of Hydriodic acid, and Iodide of Sodium are principally used. I have found Syrup of Hydriodic acid in teaspoonful doses to very materially aid in increasing the fluidity of the secretion. As many of these patients suffer from anemia, general tonics, especially those containing iron and arsenic are frequently necessary. The various types of these best suited to the individual case will readily suggest themselves.

When the Pseudo-diphtheria bacillus or the Pneumo bacillus of Friedlander was thought to be the cause, many observers began using antitoxin, and with alleged good results. Mygind of Copenhagen, reported some ten cases of genuine ozena treated exclusively this way. He used ten cubic centimeters in adults, five cubic centimeters in children, repeating in eight to twelve days. At the end of the first twenty-four hours, the crusts became softer and came away more readily. These good results were probably, however, entirely due to the fact that the antitoxins increased the glandular

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activity, thereby lessening the fetor. This method of treatment was not infrequently accompanied by painful swelling at the point of injection and various forms of skin eruption. So far as any real cure is concerned, the method is probably useless, it is expensive, the dosage is large, and I think is not now much used.

Local Treatment. A great variety of treatment has at one time or another found vogue, a variety so great that it is evident from its mere enumeration that relief of the condition and not the cure of the disease, is about all that is to be expected by the treatment. For local treatment we have first, destructive agents such as escharotics; electrolysis, the positive copper inserted in the inferior turbinate, the negative platinum in septum; the galvano cautery; strong solutions of nitrate of silver; perchloride of iron and the like.

Grossman of Vienna is using the X-rays administered to the nose through a large funnel, the front of the body being properly protected, and says he is getting improvement, though he has not used it long enough to make any definite statements as to its value.

As deodorants, the list includes: Iodoform, Citric acid, Iodol, Camphor, Permanganate of Potash, Salicyclic Acid, Acetozone, Hydrogen Peroxide, Bichloride Mercury, 1-4000; Formalin, Lysol. While as stimulants, many of which are also deodorants, we have a long list, so long that I hesitate to read the names, even of those which I have found to be in more or less use: Aristol, Salicylic Acid, Tannin, Alum, Rhatany, Opium, various stimulating volatile substances, singly or in combination. Menthol, Thymol, Nosophen, Europhen, Menthoxol, Camphoroxol, Eucalyptus and other essential oils; Cubebs, Tar, Pyoktanin, Borax in Glycerine, Chloride of Ammonium in Glycerine, Chloride of Potassium, Phosphate Sodium, Phosphate Ammonium, Terebene, Kreolin and Menthol Vasogen, Creosote, Creolin, Resorcinol, Ichthyol, Phenol Natrosulphuricum, Kalisozoidol, Zinci Sozoiodol, Ammonio-Sulpho-Ichthyol, 30-40 to 100; Stearate of Zinc alone and with many combinations; Yellow Oxid of Mercury, Rhodan, Nitrate of Silver in different solutions and the proprietary silver salts. These are used in varying strengths and in every media, some in watery solutions, some in oily solutions, some as ointments, depending on the character of the internal drugs.

Mechanical stimulants in the form of medicated bougies and the use of cotton tampons, have had much vogue, also massage by electricity and by rubbing the affected membrane with cotton tipped

applicators in order to increase the blood supply and stimulate gland activity. Injections of paraffin underneath the mucous membrane of the turbinate, especially the inferior, have been used with the double purpose of stimulation and of lessening the caliber of the nares. I think the results have not been such as to warrant its further use.

Surgical measures within the nose have had their advocates. Curetting the nasal mucous membrane seems to me hardly indicated since after its use the new tissue which forms will be destitute of glands and can therefore be of but little use as a secretive tissue. Correcting deviations of the septum and the removal of projections and spurs, thereby balancing the two sides of the nose so far as the respiratory function is concerned, I have several times found to be of advantage.

Iglauer of Cincinnati, on the theory that the saliva of the mouth might have a therapeutic effect in modifying atrophic processes and would perhaps have a stimulating or irritating effect upon the diseased mucousa, devised an Ora-Nasal Canula so as to bring the saliva into the nose. As this requires a surgical operation and a permanent opening from the mouth into the nose, with a continuous wearing of the canula, this method of treatment has more of scientific interest than of practical value, since few patients would submit to such an operation even though results as in the three cases reported by Iglauer were satisfactory. Of the three cases reported by him, in which the canula was worn without discomfort the first case relies chiefly on salivation, the second on salivation and irrigation, while the third, with scant salivary flow, relies chiefly upon irrigation.

The various local applications are of value, and serve a useful purpose in the treatment of the disease, yet the good result obtained from them is, it seems to me, due as much to the thorough preliminary cleansing which is necessary before any application is made to the diseased mucous membrane as to any specific curative power inherent in the remedy used. I have tried a great variety of these with the results about as good with one type of drug as another save that I do not think that medicines in oily solutions quite as good at watery solutions. In this connection I am entirely in accord with the remarks of Dr. French, made before the section in 1900: "Oily solutions unquestionably give vast comfort to the patient, but unfortunately, prolonged and uninterrupted use

of them is apt to hasten the course of the disease. First, because they aid in destroying the activity of the secreting glands by preventing proper evaporation; second, because they tend to choke and block the mouths of the glands themselves; and, third, because they prevent, to some degree, the serum of the blood from reaching the current of air. Keeping the mucous membrane covered with an oil simply lubricates it; affecting only the comfort of the patient for the time being, but it is in no sense curative. Oils should be used, therefore, sparingly, and, as a rule, intermittently and should be applied only after thorough cleansing of the nose with a saline wash, and that saline wash should be used before and after a spray of peroxide of hydrogen."

In the recently published transactions of the American Laryngological, Rhinological, and Otological Society, Keiper of Lafayette, Indiana, and Beck, of Chicago, report their results in the treatment of the disease. Keiper regards the local use of strong solutions of nitrate of silver (20-30 per cent), as curative, while Beck, after mildly censuring me for not paying more attention to the sinus as a causative factor, in my paper of 1906, gives his experiences with the radiograph as a means of determining whether the sinuses are affected or not, and then reports the treatment of twenty-four cases thus radiographed, all but three of which showed some involvement of the sinuses. These he divided into six groups according to treatment:

1. Irrigation of the various sinuses with iodine, formalin and sodium chloride: Results good.

2. Intra-nasal operative interference: Relief.

3. Paraffin injections into the inferior turbinate body: Improvement at once, which has continued.

4. High frequency current in nasal and pharyngeal spaces: Improvement.

5. Biers' constriction treatment: Improvement.

6. Vapor therapy using iodine, formalin and sodium chloride: Great improvement.

He thinks intra-nasal surgery gives the best results and that the results of local treatment are due to hypermia and leucocytosis, this bringing about a resolution or restitution of glandular structures and normal mucous membrane. Beck's results show that after caring for any sinus trouble which may be present, one method of treatment gives about the same results as another.

My own method of treating the individual case is somewhat as follows: First, a careful history, endeavoring to find out how long the disease has lasted, its probable etiology, its relation to the general health, and what therapeutic measures, if any, have been used. The nose and naso-pharynx are then thoroughly cleansed by syringing through the nostril and through the naso-pharynx a saline solution of which the well known Seilers' tablet or some modification thereof, is the base. A considerable amount of solution is not infrequently required. With the nasal speculum and cotton pledgets the nose and naso-pharynx are carefully cleaned of any remaining secretion and the condition of the mucous membrane ascertained. If there is the slightest reason for suspecting co-existent sinus disease, transillumination, puncture of the antrum, and probing of the sphenoid and frontal are done. I have very rarely found accessory sinus trouble to be co-existent. When it is, appropriate treatment for the condition is at once undertaken. The patient is then instructed as to the nature of the disease and impossibility of a complete cure, the possibility and probability of great improvement and his own co-operation in the treatment requested. Some form of stimulating application is applied to the nasal and naso-pharyngeal mucous membrane, preferably one containing icthyol and iodin or some of the milder silver solutions, as I do not believe that strong applications produce as good results as weaker ones. The patient is told to get a syringe, usually a three-ounce rubber one, instructed how to use it, and given a supply of alkaline tablets, two of which when dissolved in a glass of water will make a proper solution. With this solution, the nose is to be syringed at home three times a day at first. Syrup of hydriodic acid and some form of tonic is given internally and the patient instructed to report for treatment three times a week and certainly twice, until such time as he shall have returned with the nose free from crusts. With such treatment the crusts become more moist and less tenacious and in a short time the patient is much improved but is not cured and unless treatment be continued will soon relapse. I always tell such cases that unless they are willing to keep up the treatment for from six months to a year, faithfully keeping the nose clean much as they would brush their teeth, that it is useless to begin treatment. From time to time, variation is made in the local applications, the office treatment being continued until the patient returns free of crusts. In a few instances in young people, in whom I have been able to control

the treatment for a sufficient length of time, it has seemed to me that I have produced an absolute cure. In one case in particular, a girl of fourteen to sixteen years of age, whom I had under observation for several years, there was apparently a perfect cure, and the last time I saw her, some four years after the beginning of the treatment, and two one one-half years after entire cessation, the nose seemed apparently a normal one. I have recently looked up several such cases with equally good results. I have, however, had other cases under observation the same length of time in which the conditions were fairly well controllable but the present state of affairs is, or would be if the treatment were omitted for any length of time, practically unchanged from the beginning.

84 North Main Street.

Roentgen Rays as an aid to the Diagnosis of Stricture of the Œsophagus. BERTRAM DAWSON. *Lancet*, Oct. 26, 1907.

Describes the method of watching the descent of the thick emulsion of bismuth by means of the Roentgen screen. The results are better seen if the observer stands in a dark sentinel-box for ten minutes before the radiograph is thrown on to one side of it.

THOMSON.

On the Megaphone in Cases of Deafness. C. CRESSWELL BABER. *Lancet*, Oct. 12, 1907.

Recommends an instrument measuring twelve inches in length, six and three-quarters inches in diameter at the large end, and two and one-half inches in diameter at the mouthpiece. It is made of glazed cardboard, or metal, and is very inexpensive. It avoids the necessity of putting any tube or ear-piece into the patient's ear, and enables one to speak to the deaf person without first drawing his attention.

THOMSON.

ATROPHIC RHINITIS AND OZENA.*

BY CLARENCE RICE, M. D., NEW YORK.

I took the liberty yesterday of jotting down a few points, my opinions and beliefs in regard to the etiology of atrophic rhinitis and ozena, and a few suggestions regarding the treatment of this disorder, because one's creed regarding this *obscure etiology* needs to be *carefully* stated. I feel it is unnecessary to say anything in regard to either the pathological appearance or symptomotology because these parts of the subject have not only been thoroughly stated this evening, but are well understood.

First, I have always felt that it serves no possible use to classify atrophic rhinitis and ozena as two distinct diseases or forms of disease. No one has ever proven that these are two distinct or separate pathological processes. If one chooses to use such terms as atrophic or non-fetid catarrh and the other as ozena or fetid catarrh, perhaps no objection can be made, but I feel that no use is served in teaching this classification to the student, simply because in one case we have a malodorous condition and in the other not.

I venture to-night to suggest a new subdivision of the forms of atrophic catarrh based on clinical appearances and symptomology. I think it may be shown that we have what may be properly termed an *acute* atrophic rhinitis, and, secondly, a *chronic* atrophic rhinitis. The chronic form is much more commonly seen; the acute form is the one occurring in children, or in young adults preceded by a profuse purulent discharge from both nostrils, a purulent rhinitis and oftentimes brought about by some of the eruptive fevers, diphtheria or grippe. I have long felt that the purulent rhinitis of children, so ably described by Dr. Bosworth, was, in the majority of cases, if not in all, a sub-acute bilateral sinusitis.

We feel that we are authorized in styling this form of trouble acute because of its very rapid onset, profuse nasal discharge, accompanied sometimes by slight fever, and soon a rapid degeneration of the turbinated bodies. Probably this same patient in middle life simply presents the ordinary appearance of an atrophic rhinitis.

*Opening of the discussion of the Symposium read before the Section on Laryngology and Rhinology of the New York Academy of Medicine, February 26, 1908.

Purulent rhinitis, therefore, I believe to be a double sinusitis and I think that all forms of sinusitis are *contributing* causes to atrophy of the nasal tissues, but granted this, I cannot see how it can be reasonable to believe that sinusitis is the sole or usual cause of the atrophic process. In this acute form, the inflammatory condition is very much more active than the chronic, because it is attacking young, healthy nostrils, and probably a large number of virulent bacilli of various forms are engaged in the process of degeneration.

A chronic atrophic rhinitis is the ordinary form of disease so familiar to all.

Now a few words in regard to the general etiology. It seems to me that it is of very little use to discuss at great length the relations between hypertrophic and atrophic rhinitis. Even if it is admitted that the atrophic process follows the hypertrophic one in the majority of instances, such admission throws no light on the etiology of atrophic catarrh. Why should atrophy follow hypertrophy only once in twenty or thirty or forty of the hypertrophic cases and not be present in the larger remaining number. It is of little interest to say that there is in this disease atrophy of the blood vessels, nerves, muciparous folicles due to sclerosis because we know all this to be true, but why should such a process progress in one case out of twenty or thirty, and not in the others which are exposed to the same climatic conditions?

Etiological factors are commonly divided into two classes, exciting and predisposing. We think there are many predisposing, or, as I much prefer the term, contributing causes, which aid in producing an atrophic process, but in weighing the relative potency of the many contributing causes, it will be found difficult to state which is the most active. On the other hand, there may be, properly speaking, no exciting cause, and perhaps the sum total of all the contributary causes are sufficient to produce the disease. If there is one exciting cause, it must be some special bacillus; that is, the disease must primarily be of microbic origin. This remains to be proven.

It is interesting to consider the contributary causes, because I believe they are all important in the production of this disease, and I will mention some of them. They are heredity, occupation, sex, age, lack of nasal and general hygiene, all forms of nasal obstruction, including adenoids and sinus disease. It is unnecessary to

speak of these, point by point. Just here it occurs to me to say that I think atrophic rhinitis is disappearing in frequency. We certainly see fewer cases than in the old days and we believe that this is explained by the fact that nasal diseases are better understood and better taken care of. Even the careless patient, or the patient of little means, takes pains to get instruction as to the proper methods of washing and oiling the nose. Again, I believe we see far more cases of atrophic rhinitis in our clinics than in our private practice, which proves that want of care or want of cleanliness and living under improper sanitary conditions have much to do with the causation of this disease.

I have long felt that heredity was a strong etiological factor because my observation has proven this, all children of one family showing the same atrophic tendency. I believe that people are born with nostrils so badly nourished in matter of blood and nerve supply, that atrophy readily takes place when the nasal chambers are attacked by some special bacillus or when the mucous surfaces are irritated by nasal obstruction, congestion or purulent discharge from the sinuses. I consider the Herd or Gruenwald theory of the causation of atrophic rhinitis, that it is produced by empyena of the sinuses simply one of the several contributing causes. It probably is not as important as the matter of *heredity* which means the lack of resisting power of the mucous membranes of those people who suffer from this disease.

This proneness in some people to atrophy has its analogy in other parts of the body and in other forms of disease. We ought to say a word about the conditions of living and occupation. I have already said that this disease is much more frequently seen in clinics than in private practice and I consider this a significant point, not only in directing our attention toward etiology, but in suggesting treatment. I said in a paper on the treatment of atrophic rhinitis written in 1897, that I am willing to be frank enough at the outset to say that if it were left to me to select as between the value of the benefit to be obtained in the treatment of atrophic rhinitis by the use of all the local medications which have been employed, or, on the other hand, if I were given the opportunity to put my patient at out-of-door work and under favorable hygienic and sanitary conditions, I certainly should choose the latter expedient, asking only that the patient should be instructed to cleanse the nose with a suitable wash. I consider, therefore, that

dirt in the atmosphere, uncleanly habits in living, are very potent factors in the etiology of atrophic catarrh. The too liberal use of alcoholic stimulants and of cigarettes especially are contributory causes to dryness of the nose and pharynx.

To sum up my belief as to etiology, I will say that it is very probable that it will be found that the exciting causes of this atrophic disease is some form of bacteria, and we would place first and most important among the contributory causes a heredity or congenital inherent feeble condition of the mucous membrane. Among the many forms of nasal disorder, contributing to atrophic rhinitis, perhaps the most potent is a double sinusitis associated with grippe or eruptive disease. Thirdly, poverty, unhealthful personal conditions and working and living amidst unsanitary surroundings.

As to treatment: In my article on atrophic rhinitis, written some years ago, I stated the necessity of taking people suffering from this disease away from cities and unhealthful surroundings, and putting them at out-of-door work in the country. At that time I had the opportunity of sending eight persons, men and boys, who were suffering from advanced atrophic diseases, to a stock farm in New Jersey where they were employed as ordinary farm hands. They were taken from factories and workshops, and they had been treated by the ordinary remedies with little relief. The improvement in all these cases was most gratifying and I advocated at that time that it was the duty of the physician and community at large to send cases of atrophic nasal diseases to country farms whenever it was possible to do so. My belief in the efficacy of this treatment remains unchanged.

In conclusion I would say that I do not consider the prognosis in these cases nearly as discouraging as I formerly did, because I have seen so many patients who although washing and oiling the nasal chambers once or twice a day, express themselves as perfectly comfortable, and the patient's comfort is of more importance than a normal appearing mucous membrane.

It was Zeim who ordered his patients to the sea-shore or to the woods for a certain time each day in order that they might, as he expressed it, thoroughly ventilate their nostrils.

123 East Nineteenth Street.

THE ADVANTAGES AND DISADVANTAGES OF THE ENDO-NASAL METHOD OF OPERATING FOR EMPYEMA OF THE FRONTAL SINUS.

BY ROSS HALL SKILLERN, M. D., PHILADELPHIA.

Since the comparatively recent development of Rhinology to one of the foremost specialties of the day, the number of Rhinologists using, or who have made use of this procedure appear to be exceedingly small in relation to those performing the external operations.

Diffenbach[1] appears to have been the first one to puncture the frontal sinus through the nose, which he accomplished by means of a pair of straight forceps. Schaeffer,[2] of Bremen, after a lapse of forty-two years, practised the method according to his own theory. The results appear to have been doubtful and after the investigations of Grunwald[3] and Hajek[4] fell into disrepute in spite of the fact that Winkler,[5] through his anatomical investigations, attempted to justify the method as being sound and practical.

Myles[6] states that he originated the idea of taking out all of the bone between the central part of the nasal process and the frontal sinus as near the floor as possible and has operated on several cases in that way, keeping the sinus open for six weeks. He abandoned this operation because he could not chisel away the floor of the sinus through this opening, and it was difficult to enlarge the opening to the proper extent.

I have carefully reviewed the literature for the past fifteen years but failed to find a detailed account of this procedure. However, at the meeting of the Section on Laryngology of the A. M. A. in 1904, Myles stated that his "most brilliant results in the treatment of empyema of the frontal sinus have been accomplished through removal of the anterior ethmoidal cells and part of the floor of the frontal sinus through the nose." The technique of the operation, however, is not stated.

Spiess[7] further developed the operation, using the X-Ray, which enabled him to follow the course of his boring instrument through the ductus-frontalis into the sinus.

Ingals[8] uses a sound conductor which is first passed into the sinus a hollow burr is then slipped over this conductor, the electric cur-

rent turned on, and the instrument easily penetrates into the sinus.

Halle[9] protects the posterior wall of the sinus by means of a grooved instrument and removes the antero-superior nasal spine with an electric bore. These methods, particularly the latter procedures of Ingalls and Halle will now be considered more in detail.

Schaeffer[2] says: "A two mm. thick, strong but flexible steel sound is carried along the dorsum of the nose between the septum and middle turbinate directly toward the floor of the frontal sinus. The sound being pushed steadily upward, a fine crackling

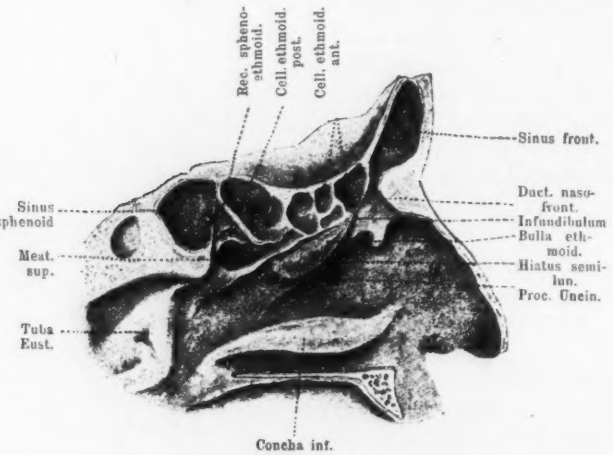

Fig. 1.

sound is soon heard as though thin plates of bone were being broken. A strong resistance is felt, but the sound is further pushed until finally one has the feeling as though it had penetrated into a cavity. Two to four teaspoonsful of blood flow out of the nose following its entrance. A discussion of this method is superfluous.

Spiess[7] used a borer three mm. in diameter in the form of a half-circle (believing that it bores more quickly and does not become heated), and subsequently enlarged the opening toward the sides and especially posteriorly one-half mm. with a fraise of the same dimensions. Sometimes it is necessary to interrupt the operation for short intervals when the antero-superior nasal spine is very thick. He warns that it is necessary to hold the handle of the instrument

with both hands lest it suddenly glide into the sinus and strike the posterior wall. Spiess himself states that the method is not reliable from a therapeutic standpoint except in cases of acute empyema.

The objections to this method are—

(1) The ever present danger of injuring the posterior wall of the sinus owing to one being unable to control the sudden slipping of the instrument into the sinus.

(2) In acute empyema it is probably superfluous as the disease practically always heals after the various conservative methods (scarification of anterior end of middle turbinate, resection of anterior end and washing out of sinus, etc.)

(3) Necessity of the presence of a large X-Ray machine.

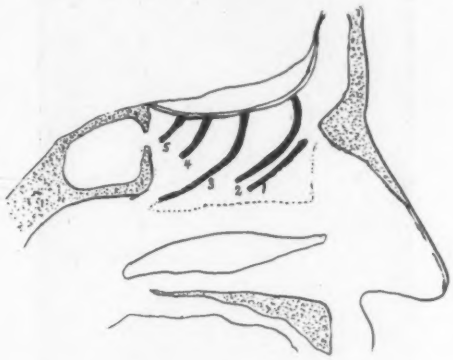

Fig. 2. (1) Lamella of Processus Uncinatus. (2) Lamella of Bulla Ethmoidalis. (3) Lamella of Middle Turbinate. (4) Lamella of Superior Turbinate. (5) Lamella of Fourth Turbinate.

Ingals[8] method: A steel pilot similar to a sound is introduced into the frontal sinus, a hollow burr with a flexible sheath is slipped over it and the chuck attached to a dental engine. Gentle continuous pressure is then made and in a few seconds the frontal sinus has been entered. After the sinus has been cleasned, a strip of gauze, saturated with ninety-five per cent carbolic acid, or a ten to twenty per cent solution chloride of zinc is introduced by means of a gauze packer and allowed to remain a few minutes. A gold tube is then placed in the canal and allowed to remain, thus completing the operation.

The advantages and disadvantages of this method may be enumerated as follows:

ADVANTAGES.

(1) It may be valuable from a diagnostic point of view, i. e., shut in empyema of the frontal sinus.

(2) The operation is indicated when it is not possible to wash out the sinus even after removal of the interior portion of middle turbinate

DISADVANTAGES.

(1) The anterior ethmoidal cells are practically always diseased and it is not only possible but very probable that the side of the gold tube would occlude their ostii and lead to further complications.

Fig. 3. From the collection of Dr. M. H. Cryer.

(2) There is some danger of wounding the posterior wall, [9] [10] [11] lamina cribosa or lamina papyracea[10] by a lateral grinding action of the burr, in spite of Dr. Ingals' assertion to the contrary. (See anatomical disadvantages.)

(3) The operation is useless when the mucous membrane has undergone great degenerative changes.

(4) The operation may be likened to Cooper's operation on the maxillary sinus with its disadvantages, i. e., the great tendency of the opening to close. If granulations form around a prothese in the alveolus, why would they not form around the gold tube of Ingals in the ostium frontale, especially when the mucous mem-

brane has been cauterized with a ninety-five per cent carbolic acid or a ten to twenty per cent solution of chloride of zinc?[12]

Halle's method[9] (quoted): "I introduce a probe as high as possible into the frontal cavity. Over the probe I slide a protector of soft, flexible metal somewhat in the manner that Stacke guides his protector into the attic, which adujsts itself to the tabula interna posteriorly and to the orbit laterally. After that I remove the probe. If I now advance with a bore drill worked by electricity immediately alongside of this protector in a forward and upward direction, taking care to keep always close to the protector, I can

Fig. 4. From the collection of Dr. M. H. Cryer.

go up to the front and center without any danger at all, and open the floor of the cavity which is formed by the spina naso-frontalis, to such an extent that I obtain an opening sufficiently large to admit a drill with a blunted point. The sharp instrument is to be used only up to this time. When this is achieved, I can easily and, because of the carefully polished point of the drill, without danger to the tabula interna, enlarge the opening suffuciently to introduce into the cavity a pear-shaped drill, whose thickened portion is carefully rounded off and polished. With this instrument no dangerous injuries can be caused, provided the least care is taken. The entire floor can be drilled away with it, and so large a part

of the tabula externa ossis frontalis in a downward direction that the instrument can be felt from without, and that the opening of the frontal cavity towards the nose becomes almost as large as the distance of the nasal base from the tabula interna."

If we likened Ingals' method to Cooper's, Halle's may be compared to the Krause-Mikulicz on the antrum.

Regarding the application of the method, I might suggest that Dr. Halle has given us an illustration of an idealistically normal frontal sinus in Fig. 1. If all our cases were anatomically constructed in such a manner, the procedure of Halle would gladly be practiced by every Rhinologist of to-day. Unfortunately such is not the case. (See anatomical disadvantages.)

Fig. 5. From the collection of Dr. M. H. Cryer.

ADVANTAGES.

(1) A much larger communication between the sinus and nose is established than by any other endo-nasal operation.

(2) The operation is performed with straight instruments, the boring being done under guidance of the eye.

(3) Should an external operation subsequently be found necessary, an important step in that operation will have already been performed, i. e., the large communication with the nose.

(4) If a small sinus is present, all portions being accessible, the cure should be absolute.

DISADVANTAGES.

The operation in acute cases will undoubtedly effect a cure but so will far milder measures in the vast majority of instances.

Concerning chronic cases, it depends upon the condition of the mucous membrane, the extent and shape of the sinus, the presence of necrosed or necrosing bone, and the presence of remote pockets of pus. As Jansen[13] well puts it, "Only a comparatively small portion of the sinus can be reached by the endo-nasal method, and the remaining part may retain granulation tissue, thickened membrane, necrotic bone and even a pocket of pus."

Disadvantages of the endo-nasal route from an anatomical point of view: A normal infundibulum from a rhinological point of

Fig. 6. From the collection of Dr. M. H. Cryer.

view seldom exists and when it does occur, may be classed as an anomaly.

By a normal infundibulum I refer to the conditions where:

(1) The ground lamella of the bulla ethmoidalis reaches the lamina cribrosa, forming a perfect arc (Fig. 1), all the ethmoid cells lying posterior to it.

(2) Where the ground lamella of the proscessus uncinatus at its junction with the ground lamella of the bulla, forms a hollow and lies against the lamina papyracea thereby conforming with the depth of the hiatus semilunaris, thus prohibiting the interpo-

sition of an infundibular cell, which occurs so frequently at this point.

(3) The posterior or cerebral wall of the frontal sinus meets the lamina cribrosa at such an angle that it forms a continuous line with the ground lamella of the bulla ethmoidalis.

(4) The antero-superior nasal spine occupies the normal position and is evenly developed as regards size and shape.

Thus the boundaries of this idealistically normal infundibulum would be: Anteriorly, antero-superior nasal spine (above), proscessus uncinatus (below).

Externally, lamina papyracea.

Fig. 7. From the collection of Dr. M. H. Cryer.

Posteriorly, ground lamella of bulla ethmoidalis.

Internally, external surface of anterior portion of middle turbinate.

Were this anatomical construction always constant we would invariably have a landmark for the position of the internal wall of the frontal sinus (lamella or bulla), as well as one for the lamina papyracea (external wall of infundibulum), thus making the technique of an endo-nasal operation on the frontal sinus dependent on a thorough knowledge of the anatomical construction of the part.

Unfortunately this, to all intents and purposes, is never present. Every conceivable variation and deviation of these structures

may be met with when least expected. Zuckerkandl,[14] referring to the ostium frontale as well as the upper part of the infundibulum, says that he has never seen a typical formation of both parts occurring together. Indeed, one can hardly speak of slight anomalies in this region, they are the rule rather than the exception.

The position of the bulla ethmoidalis plays the most important role in these anomalies, all other deviations from the normal are dependent and subsidary to this (Fig. 2). If it is situated too far forward, it holds its place naturally at the expense of the structures situated anteriorally (hiatus semi-lunaris, ductus naso-frontalis, ostium frontale and processus uncinatus), if situated further posteriorly than normal, something must occupy the otherwise empty

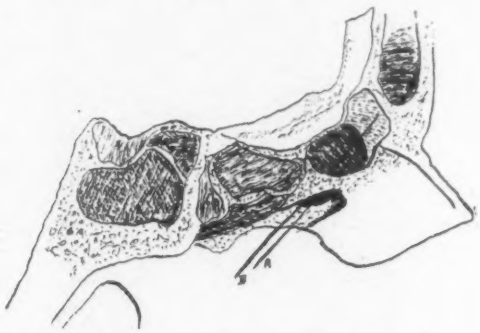

Fig. 8.—Defect in the bulla lamella, showing an extensive communication of the ductus naso-frontalis with the anterior ethmoidal labyrinth (Hajek). a.—Sound introduced into the infundibulum, which passes through a large anterior ethmoidal cell before entering the frontal sinus. b.—Sound introduced into the infundibulum passing into an anterior ethmoidal cell.

space between it and the ostium frontale. When this occurs, the ostium of a pushed forward ethmoid cell (vorgeschobene Siebbeinzelle), commonly called orbital cell, occupies this space. The position of this ostium in relation to the ostium of the frontal sinus, is also by no means constant; usually it takes a position directly posterior to it. It is this ostium which our sound often enters, simulating the exact position of the frontal sinus and is exceedingly confusing, even though the condition be suspected. The X-Ray will, however, make this point clear. The size of the hiatus depends largely upon the position of this bulla lamella and may be from the size of a thread to 4 mm. in breadth.

The most common forms of deviation from the so-called normal are as follows:

(1) The lamellae of the processus uncinatus and bulla are situated directly under the frontal sinus. The connecting lamella between the (proscessus uncinatus and bulla), instead of adhering to the lamina papyracea, bridges directly over the infundibulum, thus forming a blind ending to the hiatus semi-lunaris (Fig. 3). This ending may take on such dimensions as to protrude considerably into the frontal sinus and in this case, lies on a line but internally and above this blind pouch or infundibular cell. This construction would be eminently adaptable for both the Ingals and Halle operation except in those cases where a large bulla frontalis was present, which might cause some difficulty with the Ingals operation, as the probe could easily enter the bulla instead of the

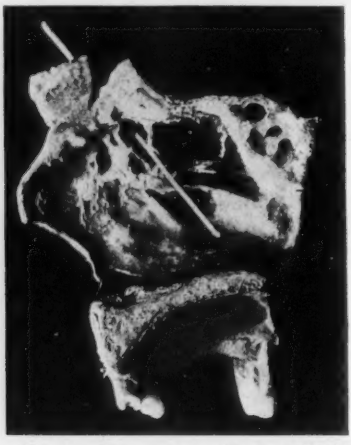

Fig. 9. From the author's collection.

sinus proper. The burr of Ingals only cutting laterally would not penetrate this bulla, especially if the walls were inclined to be thick.

(2) The lamella of the bulla and proscessus uncinatus, instead of being situated directly under the sinus, assume an obtuse angle in relation to it, the depth of the infundibulum and the position of the ostium frontale being inconstant (Fig 4, Fig. 5). Tilley [15] states: "The depth of the infundibulum from the anterior surface varies very much and may be situated at a depth of twenty-eight millimeters from the anterior surface of the bone. The direction and potency of the frontal-nasal passage varies very much. In many cases it would be impossible to enter the frontal from the nose without making a false passage."

The variations of this construction are manifold, being dependent upon the completeness of the bulla lamella. As it appears to be the rule rather than the exception for the anterior superior portion of this lamella either to assume an anomalous position or partially fail, one can readily perceive the conspicuous role it plays in the construction of the osteum frontale, ductus naso-frontalis (when present), and adjacent parts.

I see no reason why this construction is not adaptable to either the Ingals or Halle operation except in those cases mentioned by Tilley where it would be impossible to enter the sinus without

Fig. 10. From the collection of Dr. M. H. Cryer.

making a false passage. A possible objection to the Ingals' operation in this construction is: The probe might lie against the lamina papyracea as well as the posterior wall of the sinus, the burr cutting through laterally as it made its way into the sinus.

(3) The lamella of the bulla is pushed forward, leaving an abnormally large space between it and the lamella of the middle turbinate; this space being occupied by a large ethmoidal cell extendingly far up behind the posterior wall of the frontal sinus (Fig. 6.)

Ingals' operation could easily be performed here with no danger, while Halle's operation would necessitate the removal of a large portion of the anterior ethmoidal labyrinth.

(4) A portion of the anterior ethmoidal labyrinth is pushed forward in front of the ground lamella of the bulla covering the hiatus semi-lunaris from its medial and frontal aspect, thereby surrounding the entire ductus naso-frontalis with ethmoidal cells (Fig. 7, Fig. 4.)

As it would be impossible to accurately ascertain even by the X-Ray whether the sound had penetrated the frontal sinus or a large anterior ethmoidal cell, both Ingals' and Halle's procedures would require the greatest caution in their application.

Fig. 11. From the collection of Dr. M. H. Cryer.

In Fig. 4, Halle's procedure would be less desirable than Ingals', owing to the small breadth of the floor of the frontal sinus, it reaching in this case hardly one centimeter.

(5) This condition is due to a defect in the lamella of the bulla. The sound entering the hiatus passes through a large ethmoidal cell before it enters the ostium frontale. Under such circumstances it would be difficult to make a positive diagnosis of frontal sinus empyema.

An endo-nasal operation here would at least be exceedingly difficult.

(6) The antero-superior part of the hiatus is obliterated by the coaptation of the bulla lamella with the proscessus uncinatus.

Strictly speaking, the frontal sinus is absent, its place being filled by an anterior ethmoidal cell which does not communicate with the hiatus semi-lunaris but empties into a neighboring ethmoid cell. (Fig. 9 and Fig. 10.)

(7) The ground lamella of the bulla unites with that of the proscessus uncinatus low down, thereby shortening the hiatus to one centimeter. The anterior part, however, is in direct communication with the frontal sinus through a long ductus naso-frontalis.

The normal position of the anterior end of the hiatus is occupied by the ostium of an ethmoid cell which leads to the crista galli (Fig. 11). It would be exceedingly difficult to ascertain whether the sound had entered the frontal sinus even by means of the X-Ray, therefore I am of the opinion that the endo-nasal operation is here contra-indicated.

While I am free to confess, the latter anomalies are not frequently encountered, nevertheless they must always be taken into consideration. Even with the middle turbinate resected, one has no clue as to the construction of the naso-frontal structures and must be guided almost solely by touch in the individual cases as they present themselves. Speaking of the frontal sinus and its variations, Cryer[16] states: "If a thousand skulls of persons affected with diseased pneumatic sinuses were examined, the variations would be found much greater and more common than one thousand skulls examined by sectioning in our dissecting rooms."

The importance of X-Ray pictures before an endo-nasal procedure in this vicinity cannot be over estimated.

General advantages and disadvantages of this method:

It is well to try the Halle method in certain selected chronic cases (latent empyema), as we would try the Krause-Mikulicz before the Luc-Caldwell on the maxillary sinus which offers the advantage of the lesser really being a step in the greater operation. If the Halle has been performed and a Killian subsequently found necessary, a difficult step in the operation will have already been performed, i. e., the establishment of a wide communication with the nose.

A point to be considered is the totally different aspect in which the American race look at scars and deformities, and, for example,

the Germans. Where a cosmetic result according to a German would be "blameless," here it would be looked upon as an unsightly scar. In America the endo-nasal method is far preferable, at least as far as the patient is concerned. Social position and sex also play an important part in determining which method we shall use.

CONCLUSIONS.

Endo-nasal frontal operation indicated in:

(1) All cases of acute empyema with urgent symptoms where the usual conservative methods have been tried, with no relief to the patient. (Ingals' operation.)

(2) Acute cases where removal of anterior end of middle turbinate and washing out does not appear to be affecting a cure. (Ingals' operation.)

(3) Cases of chronic empyema where a small sinus is present. (Halle operation.)

(4) Cases of chronic empyema regardless of the size of the sinus where one has reason to believe no great pathological changes have taken place in the mucous membrane. (Halle operation.)

(5) In any case where for cosmetic reasons it is necessary to give the patient the benefit of the doubt.

Endo-nasal frontal operation contra-indicated.

(1) When it is not possible to pass a sound into the sinus.

(2) In abscess and fistula formations.

(3) When intra-cranial complications are suspected.

Endo-nasal frontal operation will probably be unavailing where:

(1) Great pathological changes have taken place in the mucous membrane of the sinus.

(2) Numerous ramifications and partial septa are present in the sinus.

(3) Large pushed forward (orbital) ethmoid cells are present which are likewise diseased.

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HEMORRHAGE FOLLOWING QUINSY. LIGATION OF THE COMMON CAROTID ARTERY: RECOVERY. WITH A STUDY OF 51 CASES OF HEMORRHAGE IN CONNECTION WITH PHARYNGEAL SUPPURATION.

BY JAMES E. NEWCOMB, M. D., NEW YORK CITY.

The title of this paper has been so worded as to include cases which have been reported under various headings, and to permit a proper grouping of them. The majority of the hemorrhages have occurred in connection with ordinary quinsy. The subject was brought to the attention of this Association in 1900 by Dr. W. F. Chappell, who reported a case under the title of "Hemorrhage from a Circumtonsillar Abscess," and stated that he had found ten similar cases recorded. (Transactions, 1900, page 213). The personal experience of the writer hereinafter described has led him to make an extended study of the matter, and fifty cases in all have come to light. In proportion to the vast number of cases of this malady which run their clinical course without untoward incident, the number of those with hemorrhages is manifestly extremely small, but the alarming possibilities which this complication presents render it obligatory upon us always to bear it in mind and in case it happens, to have a well-considered plan of procedure.

Through the courtesy of Dr. John D. McBarron, I am able to report the following case seen in consultation with him.

The patient was a stout plethoric German, 55 years of age, married and well to do. He lived very comfortably, and was a rather free consumer of alcohol. His vessels showed distinct arteriosclerosis. There was no history or evidence of specific disease and his urine, which had been examined within six months, showed no evidence of renal trouble. For a period of between thirty-five and forty years, he had had numerous quinsies, and in the intervals between his attacks much treatment with reference to preventing recurrence of his throat infection. This had been so far successful that he had enjoyed an immunity for ten years. In none of the previous attacks had there been any clinical features out of the ordinary.

On February 3d of the present year a new attack came on, and Dr. McBarron found both tonsils inflamed and suspected commenc-

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ing suppuration. On February 6th local conditions indicated a pointing of pus on the left side, rather far out into the soft palate. An incision was made, the knife going through brawny tissue for about three-eighths of an inch, and then, apparently, entering a cavity, which, on withdrawal of the blade, voided about a dram of healthy-looking odorless pus, and partially collapsed, but almost immediately became distended with blood, some of which was spat out and was apparently venous. The incision was enlarged with a stiff probe, the clots turned out, various astringents used, per-oxide injected and the bleeding ceased.

Some thirty-six hours later, just as Dr. McBarron was in the house visiting his patient, the bleeding recurred, and this time the color of the blood was distinctly arterial. It was at this stage that the writer was called in. The blood was coming from the original pus cavity. Bleeding was not severe, but persistent. The cavity was cleansed and packed with a strip of gauze dipped in a solution of aceto-tartrate of alum. Bleeding was again checked. The gauze was removed the next morning without incident. Some fourteen hours later, bleeding recurred, and was now more persistent and in increased amount. Another attempt was made to pack the cavity, which was mainly in the soft palate, when it was discovered that the suppurative process had perforated the posterior surface of the palate and that the gauze was all going into the pharynx. It was withdrawn, and recourse had to ice internally and externally, together with the usual local applications, but all to no avail. Hemorrhage continued at intervals, although the total amount lost was not enough to exhaust the patient; but he had become pretty well demoralized from loss of sleep during the days of his illness, and from the fact that he had been unable to swallow but scanty nourishment.

It was now evident that something more radical must be done for we were unable to feel any security against the occurrence of what might be an alarming hemorrhage. It was impossible to locate the exact source of bleeding, and the sloughing condition of the entire area affected rendered any plan of suturing out of the question. The question of ligating one of the large arteries came up, and Dr. Charles N. Dowd, a general surgeon of our city, was called in. After a full consideration it was decided to ligate the common carotid artery on the side involved, and this was done about nine o'clock on the morning of February 9th. The patient's habits, with reference to alcohol, made the giving of an

anaesthetic a very difficult procedure, but it was carried out in a masterly manner by Dr. Thomas G. Bennett. Chloroform was used, and after the man was fairly under its influence, stiff rubber tubes were passed through the nares, their proximal ends loosely wrapped with gauze on which the chloroform was poured, and the pharynx stuffed with gauze. This prevented the leakage of blood down the throat during the ligation of the artery. The latter was done by Dr. Dowd without incident. Two ligatures were passed, one with single strand and one with double, about half an inch apart. As soon as they were tightened, the bleeding instantly ceased and never returned. The patient made a good recovery from the operation. There was no disturbance of cerebration. He complained of considerable neuralgic pain all over the head, and had difficulty in sleeping at night. These symptoms were successfully combatted with the usual remedies, and a perfect eventual recovery ensued. About three weeks after operation a pulse could be detected in the left temporal region.

A careful and profound search through the literature has brought to light fifty additional cases which may properly be placed under the title selected for this paper. As always happens in a collation of cases extending over a long period of years, classification is somewhat difficult, as each reporter has followed his own ideas in setting forth the particulars of his own experience. It seems logical to make of the material here presented the following subdivisions:

GROUP I.

Spontaneous opening of the abscess; immediate hemorrhage.

A. Fatal cases.

Caytan; male, 38 years, no operation, ulceration of the internal carotid.

Grisolle; no particulars given; no operation, ulceration of the internal carotid.

Léfort; no particulars given; no operation; bleeding believed to have come from the internal carotid.

Méry; no particulars, no operation, abscess led to ulceration of the internal carotid.

Macgregor; male, 20 years, no operation; tumor appeared in right side of neck, running down to the mastoid process, autopsy revealed a circumtonsillar abscess, communicating with the internal carotid by an opening the size of a small bougie.

Monod; male, 38 years, no operation, probable ulceration of internal carotid.

Norton; female, 4 years, no operation; incision of abscess was refused by parents. Autopsy revealed ulceration of internal carotid.

B. Recoveries.

Dunn; child 3½ years, bleeding immediate and recurred 24 hours later; cervical haematoma; ligation of common carotid, after which tumor gradually decreased in size; bleeding was seen to come from the posterior faucial pillar.

Luke; no particulars, bleeding immediate and recurrent, ligation of common (?) carotid.

Messiter; male, 24 years, immediate bleeding, profuse and recurrent; initial hemorrhage on 4th day of a quinsy and recurrence on the 19th day. Ligation of common carotid.

Pircher; male, 22 years, bleeding immediate and recurrent, ligation of common carotid; definite statement that no bad effects followed the operation.

Summary of Group 1: Eleven cases, seven fatalities and four recoveries.

GROUP 2.

Spontaneous opening of the abscess; secondary hemorrhage.

A. Fatal Cases.

Bourguet; male, 20 years, bleeding recurrent, no operation.

Brewer; male, 25 years, small immediate and later recurrent hemorrhage, no operation; an effort was made to secure pressure against the posterior surface of the soft palate by means of a small roll of gauze to which were attached tapes coming out through the nares. Arrest of hemorrhage for a while, but later fatal recurrence; supposed rupture of a small abscess on the posterior surface of the soft palate.

Clayton; no particulars, no operation, ulceration of internal carotid.

Hall; male, 26 years; bleeding came on two hours after the abscess burst. Fatality probably due to rupture of a carotid aneurism as a few minutes previously the patient had complained of a "balloon-like" feeling in his throat; no operation.

Mueller; male, 44 years, recurrent pus and blood, no operation Autopsy showed facial artery thinned and ulcerated; cavity full of pus at bottom of left tonsil.

Reeves; few particulars, hemorrhage same day as opening of abscess and recurrent. Operation proposed, but refused.

Vergeley; male, 34 years; blood and sphacelus on bursting of abscess, and again a few hours later; operation refused; autopsy showed in retro-tonsillar space a cavity the size of a pigeon's egg, full of clots and sphacelus; internal carotid trunk cleanly severed about two inches from bifurcation of the common trunk.

Walker; few particulars, hemorrhage 48 hours after abscess burst; tumor formed along right side thyroid cartilage; communicating with abscess; no operation.

B. Recoveries.

Ehrmann; male, 22 years, hemorrhage on the eighth—ninth day, ligature common carotid; supposed lesion of internal carotid.

Moizard; male, 40 years, large hemorrhage in twenty-four hours causing syncope, which checked bleeding; clot seen in situ in vessel wall; no operation; ether, ergotin hypodermically, rest and carotid compression.

Marotte; male, 30 years, hemorrhage in forty-eight hours; no operation; large doses of quinine given for some days.

Postempski; male, adult, hemorrhage twenty-four hours after bursting of abscess; ligation of common carotid artery; suspected lesion of internal carotid.

Stoupy; male, 22 years, hemorrhage on 8th day, ligature of external carotid; massive inflammation had appeared in region of submaxillary gland; incision for ligature encroached on this area and gave exit to considerable clotted blood, and in spite of ligature external bleeding continued for a while, but patient eventually recovered.

Veillard; male, 26 years; recurrent hemorrhage some hours after abscess burst and recurrences; no operation, ice and rest.

Weinlechner; male, 37 years, hemorrhage two days after abscess opened; ligature of common carotid, with immediate recovery, but evidences of disturbed muscular power appeared on the opposite of the body: In six weeks this had nearly disappeared; later death from apoplexy.

Summary of Group 2: Fifteen cases, eight fatalities and seven recoveries.

GROUP 3.

Abscess opened by incision; immediate hemorrhage.

A. Fatal cases.

Duke; male, 32 years; pulsatile tumor had appeared in tonsillar region; ligature of common carotid immediately stopping pulsation; ligature came away on the sixteenth day, and on the twenty-

first day the man appeared perfectly well and was dismissed; one week later he went on a debauch and had a fatal hemorrhage.

Lebram: (second case), male 2 years, no operation, bleeding also from ear.

Fehleisen; male, 34 years; after incision clots were turned out of abscess cavity, but threatening dyspnoea necessitated tracheotomy during which patient died; swelling had appeared at angle of jaw following angina with fluctuation over it; internal structures were pressed toward middle line; no bruit or pulsation in pharynx; carotid vessels were found lying in purulent foci and perforated at bifurcation.

Liston; incomplete report; ligation of common carotid which did not control hemorrhage.

B. Recoveries.

Lebram; (first case), female, 9 years, hemorrhage from pharynx, nose and ear; ligature of common carotid; hemiplegia followed ligature.

Long; incomplete report; free bleeding followed incision; later, patient was found choking, and was resuscitated with great difficulty; no operation.

McBarron: (case reported in this paper), male, 55 years, hemorrhage immediate and recurrent; arterio-sclerosis; ligature common carotid.

Summary of Group 3: Seven cases; four fatalities, three recoveries.

GROUP 4.

Abscess opened by incision; secondary hemorrhage.

A. Fatal cases.

Pitts; male, 39 years; hemorrhage twenty-four hours after incision and recurrent; ligation common carotid; autopsy showed left tonsil replaced by cavity and the internal face of the internal carotid bathed in pus with a perforation the size of the tip of the little finger.

Watson; incomplete report; hemorrhage forty-eight hours after incision; ulceration of lingual artery found.

(In this category it seems proper to include two cases reported by Kaplan, although they did not present the usual clinical features of an ordinary quinsy. The incisions in these cases were made externally, but both cases have been reported as hemorrhage, due to circumtonsillar abscess. The surgical conditions, and especially the problems they offered make this classification here followed log-

ical. For a summarized history of the cases taken from their original source of publication in one of the Russian journals, I am under obligations to Dr. S. M. Jacobs of New York.)

Kaplan; (first case), male, 22 years; a fluctuating swelling the size of an egg, appeared at the angle of the jaw externally, tonsil red and inflamed; incision revealed a deep pus cavity leading toward throat; wound did well for thirteen days and then bled most profusely; ligature of common carotid; paralysis of arm and leg of opposite side; ten days later paralysis much better, but patient lost consciousness and died with slight convulsion of paralyzed side; hemorrhagic pleurisy.

Kaplan; (second case), male, 19 years; tumor at angle of jaw; incised and pus found burrowing toward pharngeal wall; same day cyanosis choking, tracheotomy with temporary improvement; forty-eight hours later, sudden hemorrhage from wound, nose and mouth; ligature of common carotid immediately checked it; patient regained consciousness, but soon became comatose and died; perforation found in internal carotid:

B. Recoveries.

Borbone; incomplete report; hemorrhage the day following incision.

Chappell; male, 27 years, hemorrhage fourth day and recurrent, controlled by packing; no operation.

Gleitsmann; male, 24 years, hemorrhage eighth day and recurrent; styptic packing controlled; no operation.

Schmiegelow; male, 30 years, hemorrhage fourth day; ice, rest and morphine controlled probable lesion of a twig of the tonsillar or ascending pharyngeal artery.

Summary of Group 4: Eight cases, four fatalities and four recoveries.

As far as reports show all of the cases in the foregoing groups were quinsies. Additional cases have been reported which may be grouped as follows:

GROUP 5.

Hemorrhage following retro-pharyngeal abscess.

Carmichel; male, 5 weeks, immediate hemorrhage following the opening of the abscess; no operation, death; abscess found to connect with posterior tonsillar cavity; bleeding from a branch of the external carotid.

Clutton; male, 28 years; spontaneous opening of abscess; hemorrhage immediate and recurrent; ligation of common carotid, and

of its external, and internal branches, recovery; blood thought to have come from the internal jugular vein; abscess appeared to focus above the right tonsil.

Erichsen; incompete report; phlegmon in pharynx discharged pure pus; on seventh day fatal bleeding from abscess cavity; autopsy revealed abscess bordering wall of internal carotid, which had been perforated.

Franklin; male 8 years, spontaneous opening of abscess, no operation, recovery; pulsating swelling was evident on the outer side of neck, evidences of general sepsis, later subsidence of external swelling; aphonia not clearing up for several months, long and tedious convalescence; one year later slight weakness of arm and pes equino-varus; probable embolus of middle cerebral artery, a terminal branch of the internal carotid.

Chassaignac; incomplete report; immediate hemorrhage following incision; ligation of common carotid, recovery; probably false aneurism, due to carotid erosion.

Summary of Group 5: Five cases, two fatalities and three recoveries.

GROUP 6.

Hemorrhage in connection with scarlatinal suppuration.

Immermann; male, 17 years, spontaneous opening of abscess, sudden buccal hemorrhage, no operation, death; deep tonsillar abscess found which had perforated carotid, much blood in bronchi.

Pepper; male, 30 years, spontaneous opening, recurrent hemorrhage; ligation common carotid artery, recovery; blood regarded as having come from internal carotid; left vocal cord paralyzed before operation.

Mahomed; in discussing Pepper's paper, reported six cases without particulars, except that some were fatal. From lack of data these cases are not included in this summary.

Lyot and Petit; female, 19 years, elastic swelling suddenly appeared in left mastoid region with systolic bruit; left tonsil pushed toward median line and compressible; puncture externally withdrew blood; spontaneous subsidence; no internal bleeding, recovery.

Summary of Group 6: Three cases, one fatality, two recoveries.

GROUP 7.

Hemorrhages in connection with gangrenous tonsillitis.

Craigin; male, 45 years, spontaneous opening and immediate hemorrhage; no operation, death; right tonsillar space and poste-

rior pharyngeal wall showed partly detached slough, exposing open months after initial tonsillar symptoms; no operation, death from geal.

Terganowan; male, 20 years, spontaneous opening, two or three mouths of two small arteries, possibly twigs of ascending pharyn- hemorrhage; autopsy showed complete destruction of parotid gland and gangrenous softening of entire circumference of external carotid with fistulous opening into throat.

Summary of Group 7: Two cases, both fatal.

Two other cases have been reported under the heading of hemorrhage from circumtonsillar abscess, but they do not seem to the writer to belong to this category.

Wulf; female, 6 years; suspected aneurism of internal carotid; pulsation stopped by compression of the external trunk; ligation of common trunk, with cessation of pulsation and bruit in pharynx; recovery; sac filled up with blood clot, but later suppurated and puncture then gave fluid blood; eventual recovery.

Savory; apparently a case of abscess in the neck involving internal structures, with external hemorrhage; no operation, death.

Excluding the last two cases, we have then fifty-one well authenticated cases of hemorrhage dependent on suppuration in connection with pharyngeal structures. Of this number twenty-three recovered and twenty-eight died, a mortality rate of 54.8 per cent. These figures show the gravity of this complication. Sex is stated in thirty-nine, of which number thirty-five were males and four females. This fact is of no special significance, as circumtonsillar and other pharyngeal abscesses are more common in males. Age is given in thirty-seven cases; seven occurred in the first decade of life, five in the second, eighteen in the third, six in the fourth and one in the fifth. The maximum and minimum ages were 55 years and 5 weeks, respectively.

Operations were performed as follows: ligation of the common carotid sixteen times, with eleven recoveries and five deaths; of the external carotid once with recovery and of the common trunk with both branches once with recovery.

As regards the result of ligation on brain function, no statement is made in eleven of the sixteen cases of ligation of the common trunk; in three cases paralysis followed, and in two it is definitely stated that there were no bad effects. No statement with regard to this point is made in the case of ligation of the external

branch nor in the case of ligation of the common trunk and both its branches.

Autopsy records are given in thirteen cases. The bleeding came from the external carotid in two, ascending pharyngeal in one, "carotid" in one, lingual in one, at the bifurcation in one, facial in one; in ten cases in which no autopsy was held the blood was supposed to come from the internal carotid, and from the internal jugular vein in one additional case.

Many interesting questions suggest themselves in connection with this class of cases. We have time to consider but one or two of them.

The first relates to the invasion of arterial structures by suppurative processes. That this does happen is now universally believed, but we must remember that until comparatively recently, it was a mooted point. It was but forty years ago that Bouchard observed that while an artery in a purulent focus did sometimes rupture, he was not prepared to admit that the latter accident was referable to an ulceration in the proper sense of the latter term. In 1873 Cauchois stated that such rupture occurred as the result of the following pathological sequence: 1. Denudation of the artery by the destruction of the cellular wall; 2. Suppurative inflammation of the external tunic; 3. Disassociation and disappearance of the muscular fibres of the middle coat, and 4. Rupture of the external tunic. In 1878 Ehrmann called attention to the patient's general condition as bearing on vascular rupture in pharyngeal suppuration, but did not admit the existence of any diathetic condition as indispensable to the rupture. In 1882 Monod noted that one of the most constant effects of arterial inflammation was the disappearance of the muscular tunic. The muscular and elastic fibers, he says, give place to connective tissue which often unites itself with that of the external tunic and the vegetations of the internal tunic. There results, consequently, a weakening of the vessel wall. Often the external tunic hypertrophies and so supplements the deficiencies of the middle.

Now, all these processes are apt to assume a peculiar virulency in the region under consideration, owing to its proximity to the air passages. The mouth is a hotbed of all sorts of bacterial life, and the parts are constantly flushed with the air of inspiration and expiration. Pus near the air passages rapidly decomposes. The fetid characteristics of mouth abscesses and their virulence are

well known. Hence the pus and gas confined in the pharyngo-maxillary space cause a rapid death of the arterial wall before any compensating hypertrophy of the latter can be brought about by nature's conservative processes.

Granting the existence of a weakened vascular wall, we have further to recognize the presence in some cases of adjuvant causes of rupture, such as cough and violent muscular effort which momentarily increase the pressure in the vessel. These patients are especially liable to cough from the irritation of the initial blood which trickles down the pharynx, and a slight leakage may become a formidable rent. Another cause, following now the incision of the abscess, is the sudden diminution of pressure on the outside of the vessel wall produced by the accumulation of pus under pressure, which acts as an elastic cushion. The weakened vascular area is thus between the internal force of the blood pressure and the external force of the pus sac. If the latter is suddenly depleted by incision, the unbalancing of pressure is too great for the further resistance of the weakened area, and it gives way. Here arises a point of great significance for the surgeon for the hemorrhage which immediately follows incision is apt to be referred by the patient or his friends to unskillful intervention. Such was the experience in the case reported in this paper. The patient had been having quinsies for over thirty years. They had been opened repeatedly. No hemorrhage had followed. All this long time his habits in regard to consumption of alcohol had been leading up to a condition of distinct arterio-sclerosis. In the last attack the vessel, whichever one it was, had become vulnerable, and when the escape of pus removed the counter-pressure on the vascular wall, it gave way. In a sense, it is true, the surgeon does cause the bleeding, but how much better that it should occur under such conditions than that the destruction of the vessel wall should increase in extent and the rupture of the abscess come on at a time when no relief is at hand, and an immediately fatal hemorrhage may follow. In those cases in which the bleeding has been controlled by various means, we must assume the formation of a thrombus which acts as a plug, and which later becomes organized permanently, stopping the leak.

Even in the case of an aneurism (of which more later) if the opening is not large, it may be closed by a thrombus. At this stage incision is far less dangerous, even if after the emptying of the abscess cavity the thrombus becomes loosened and bleeding

recurs. It is possible for the thrombus to involve the contents of the aneurismal sac and become organized. Under these circumstances, spontaneous healing occurs. (case of Lyot and Petit). The chances of such a favorable outcome, however, are lessened if the thrombus is surrounded by pus. The occurrence of a false aneurism depends also on the stability of the abscess wall. If it is friable and ruptures, probably a fatal hemorrhage will occur. The same untoward result may also happen if the abscess has already opened before the arterial wall is perforated.

We have all opened many quinsies and will open many more. We must not forget that some of the most severe and even some of the fatal cases of hemorrhage have come like the thunder-clap out of the clear sky. Patients who have presented only the signs and symptoms of an ordinary quinsy have died from this complication. Naturally, therefore, we are faced with this question; leaving out those cases in which a pharyngeal swelling with pulsation, bruit, etc., indicate the definite course to pursue, are there any signs or symptoms which will warn us that we are confronted with the gravest of dangers? In other words, what quinsies are harmless in this respect and what potentially harmful? The matter of differential diagnosis has received the careful attention of Lebram. We are called on mainly to decide between three conditions, an inflammatory process, a tonsillar tumor with metastases in the cervical glands, and an aneurism. Decision is further complicated by the fact that carotid aneurism sometimes presents distinct evidences of inflammation suggesting a quinsy. Certain aural lesions are accompanied by an extension of suppuration down into the circumtonsillar region. An abscess may form and a pulsation be communicated thereto by some neighboring vessel, though the latter itself is intact. Syphilitic processes with glandular involvement rarely confuse us. The question then reverts to the possible injury of an artery. If an abscess has opened, has blood already appeared, or can clots be turned out of the cavity? Autopsies in such cases have shown that the blood may come from the internal carotid, a branch of the external carotid, the palatine branch of the ascending pharyngeal, the lingual or the inferior palatine branch of the facial. If incision evacuates clot and fluid blood escapes later in greater or less quantity, we must regard it in the highest degree probable that we are dealing with hemorrhage from the carotid which has led to the formation of a false aneurism. Even with unruptured abscess wall inspection, palpation and auscultation

would enable us to make a diagnosis if they were uniformly present, but unfortunately they are not as the case of Fehleisen shows. Under such conditions compression of the artery above and below the abscess would make a difference in the latter's physical characteristics. It has been found that when inflammation develops over an aneurism pulsation and other usual features may be lacking. Under these circumstances we assume a partial or complete clotting of blood in the sac. The general feel of the parts would not differ from that of an abscess. We would look for a softness and indefinite fluctuation. Some cases of aneurism have presented a tumor-like swelling of the cervical glands.

A point of anatomy mentioned by Chaissaignac should be borne in mind. He notes that after middle life the internal carotid at this level describes a curve with its convexity directed inward. (cf. the paper by Connal in the March, 1908, number of the Journal of Laryngology on "Abnormal Pulsating Vessels in the Pharynx.)

Extra-cranial aneurisms of the carotid of traumatic origin are rare. Lebram found only three instances recorded.

Further factors to be taken into account are gout, arterio-sclerosis and lues, also the age of the patient. Growth of an aneurism under these conditions would be slow, and gradual, while aneurism caused by suppurative erosion develops rapidly.

In regard to diagnosis of swellings in this region by the use of the exploring needle we are left in doubt in cases in which the pus is thick or the swelling contains clotted blood. A suspicion of aneurism would, of course, contra-indicate diagnosis by puncture. If a tumor has appeared in the neck a portion might be excised for submission to the microscope.

The brief notes following the cases reported above show that hemorrhage has been checked by or has followed the use of ice,, rest, morphine, packing, etc. Previous to opening a suspicious swelling the artery may be exposed as a provisional measure. Experience would seem to show that in these severe cases the safest plan is to ligate the common carotid. But rarely can we determine the pleeding point. This fact is Clutton's jujstification for advising the ligation of the common carotid, together wth its two terminal branches. It may be asked, why ligate the common trunk and not the external branch? We find the latter sufficient in post-tonsillotomy hemorrhages, but it must be remembered that in the latter emergency quite different local conditions prevail. Pepper states that the ascending pharyngeal which undoubtedly is the

source of the bleeding in some of the quinsy cases comes off from the bifurcation of the carotid and ligation of the external branch would not, therefore, help us. The text books on anatomy, however, state that the origin of the artery is not at the bifurcation, but half an inch above. Moreover, ligation of this external branch would lead us into sloughing tissue We are here in a very different environment from that of the non-suppurating tissue of an ordinary tonsillar hemorrhage. Pitts declares that ligation of the common trunk alone is not safe as anastomosis is very common through the branches of the external trunk. Morris expresses considerable doubt as to the possibility of an anastomosing flow through the arteries within the skull, ever reaching down as low as the origin of the internal carotid in the neck. While traumatic hemorrhage in this region generally involves the external carotid or ascending pharyngeal, a large repeated hemorrhage secondary to suppuration is far more likely to involve the internal carotid. Under these circumstances if Morris is right, ligation of both common and external trunks would prevent returnng hemorrhage. The dangers of ligation of the common trunk are not to be under-estimated, but this factor relates to the casuistry of general surgery, and need not be discussed here.

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Since this paper was finished another article on the subject has come under the author's notice, viz., that by Nettebrock (Zur Casuistik der Blutungen nach Tonsillotomie und ihre Behandlung; Inaugural Dissert. Kiel, 1906). This writer reports two cases:

Case 1. Angina incised in a man of 30 years with slight bleeding which recurred later and was controlled by tampon.

Case 2. Tumor formed in the region of the tonsil, and was incised on the fifth day of throat symptoms on the supposition that it was a quinsy. Fever was lacking, and no pulsation was made out. Incision was followed by escape of blood, but no pus. Bleeding recurred, requiring ligation of common carotid and tracheotomy. This proved sufficient, and the tumor gradually disappeared. Its exact nature was not determined. Some hemiplegia of the tongue followed ligation, but this soon cleared up.

No. 118 West Sixty-ninth street.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, Feb. 26, 1908.

WOLFF FREUDENTHAL, M. D. Chairman.

PRESENTATION OF PATIENTS.

A Case of Osteo-Chondroma of the Septum with Extensive Absorption of the Cribriform Plate, Tumor Extending Into the Cranial Cavity, Sphenoidal and Ethmoidal Cells. By ROBERT C. MYLES, M. D.

Mr. J. C. had an operation on his nose ten years ago. Three years afterward, his nose began to be obstructed and he consulted a physician, who made a diagnosis of a large bony growth situated very deep in the nose. Mr. C. then consulted another physician, who operated by boring through the nose. This was followed by some relief. In February, 1907, the patient consulted Dr. C., who diagnosed a large bony tumor back of the nose and advised a radical operation. Patient consulted Dr. Myles at the New York Polyclinic, April 27, 1907. Diagnosis was made of a very hard tumor, probably an osteoma, involving the posterior part of the septum and extending into the spheno-ethmoidal region.

A radical external operation was advised, but patient declined, and was not seen again until January 8, 1908, when he consented. Diagnosis was changed to probable osteo-sarcoma, as it had more than doubled in size during the past eight months and because a trocar was driven in it with moderate taps with the hammer.

The operation was performed under cocaine, morphine and hyoscyamin anaesthesia by Dr. John A. Bodine and the writer, January, 18, 1908. After one external carotid artery had been tied, and a temporary ligature placed around the other, an incision was made transversely through the nose close to the inferior borders of the nasal bones, extending through the alae nasi and the quadrangular cartilage down to the level of the face. This allowed the tip of the nose to drop down on the upper lip. The incision was then continued along the line of the articulation of the nasal bone and the nasal process of the superior maxillary as far as the frontal bone, and thence across the nose along the articulation between the nasal bones and the frontal bone. Then the nasal bone

was separated from the superior maxillary with a heavy pair of cutting forceps and from the frontal bone with a chisel and mallet. The patient at this juncture protested, manifesting symptoms of some distress and pain. The bridge of the nose was broken loose, laid over the left side and a large tumor was seen filling the greater part of the nasal cavities and accessory sinuses. The macroscopical appearances were those of a sarcoma, especially to our minds, which were already biased in favor of that diagnosis. After Dr. Bodine had removed a part of the tumor, he requested me to remove the deeper parts, which I did, aided by a headlight and instruments especially adapted for intra-nasal procedures. Prolongations of the tumor had extended into the sphenoidal and ethmoidal cells, and the orbital and cranial cavities. Great care was used not to puncture the phagocytic walls and meningeal membranes. A little chloroform was used during the time I was removing the tumor from the cranial cavity. It was noticed that over the area where the cribriform plate was absent there was intra-cranial pulsation for about one-fourth of an inch.

Microscopical examination of the specimen proved it to be a chondroma. This diagnosis was made by Dr. Jeffries and corroborated by Dr. Jonathan Wright. I present a slide for your examination and a six-ounce bottle filled with only a part of the tumor which was removed. The patient has made an uneventful recovery under the careful attention of my assistant, Dr. Augustus Anderson.

Replying to Dr. Coffin, Dr. Myles showed a piece of the tumor that was removed from the sphenoid cells; the parts that came from within the cranium were long pieces, which had to be scooped out. He did not expect to have any further trouble with the case. The tumor extended through the inner canthi and grew very rapidly. The patient has been under the hands of several physicians, though he did not remain long with any one. The results of the cocaine anaesthesia in this major operation about the nose were very satisfactory. During the tying of the carotids he made no protest, but complained of some discomfort during the latter part of the operation.

Case of Offensive Ozena. By R. C. Myles, M. D.

The patient was a young girl with an almost classical face, yet Dr. Myles said that she had had one of the worst and most offensive cases of atrophic rhinitis he had ever seen. The case developed when she was about 12 years old. If it had developed earlier in

life, the form of the bones would not have been so perfect. The case was interesting, as being one of most aggravated ozena with perfect osseous development. The girl was compelled to leave school on account of the disease.

The crusts were examined in many ways, and showed the diphtheria bacillus.

Case of Excision of the Tonsils. By R. C. MYLES, M. D.

Dr. Myles showed a patient with tuberculosis of the tonsil, cured by excision. The man came in about five weeks ago from out west, having been with his sister-in-law who had tuberculosis. He had an ulceration in the upper part of the tonsil extending upward and into the connective tissues of the palate and neck backward. The pain was so great that he was not able to eat. The tonsillar diseased area was excised as completely as possible and at least one-fourth of an inch of the connecting tissue. The cavity was curetted and burned with an electrode. On alternate days 100 per cent. lactic acid and a solution of formalin 1 to 4 per cent were rubbed in thoroughly. There was no evidence of disease of the larynx or lungs, and the most interesting point was the immediate cessation of the pain after the operation. The patient made an uninterrupted recovery, and has had no return of the pain. At a certain stage, irritants seemed to make the condition worse, but under a 50 per cent solution of argyrol the wound healed.

A Consideration of the "Herd" Theory as an Etiological Factor in Ozena. By Clement F. THEISEN, M. D., Albany, N. Y.
(*Published in full in this issue of* THE LARYNGOSCOPE, *page* 417.)

The Pathology of Atrophic Rhinitis with Ozena. By D. BRADEN KYLE, M. D., Philadelphia.
(*Published in full in this issue of* THE LARYNGOSCOPE, *page* 423.)

The Treatment of Atrophic Rhinitis, Including Ozena. By ROBT. E. MYLES, M. D., New York.
(*Published in full in this issue of* THE LARYNGOSCOPE, *page* 425.)

Treatment of Atrophic Rhinitis. By GEORGE L. RICHARDS, M. D., Fall River, Mass.
(*Published in full in this issue of* THE LARYNGOSCOPE, *page* 429.)

DISCUSSION OF SYMPOSIUM.

Atrophic Rhinitis and Ozena. By CLARENCE RICE, M. D.
(Opening the Discussion.)
(*Published in full in this issue of* THE LARYNGOSCOPE, *page* 435.)

DR. MYLES, closing, said that in his paper he had referred to the typical atrophic rhinitis, which when one sees and smells, one can

never confuse with anything else. This type is rarely unilateral, and the picture is plain. The mucosa and the turbinals seem to be arrested in their development. In these cases he has suspected contagion either by contact or by air. He had seen three or four children, in one family, whose noses were atrophied, and yet the children were rosy and healthy.

This peculiar pus must have something *sui generis*. He did not refer to cases in which there were dry spots, but the cases of general atrophy, and a general degeneration of the mucosa which has a peculiar gray color, and a peculiar tenacious pus. Chemists report that they have nothing that will dissolve it, and it has a tenacious quality of spreading over and adhering to the surface of the mucosa. He thought this had a great deal to do with the arrest of development. He believed that most of the secretions came from the accessory sinuses. In such cases he generally found when cleansing the respective sinuses ten or fifteen drops of a peculiar grayish mucus, which yields under fermentation a peculiar and distinctive odor.

In response to a question from Dr. Kyle as to whether the children to whom he referred all belong to one family, and whether any of their playmates contracted the disease. Dr. Myles replied that he had never examined any of their playmates and did not know about this point.

Stated Meeting, April 2, 1908.

JOHN A. WYETH, M. D., PRESIDENT OF THE ACADEMY, in the Chair.

WOLFF FREUDENTHAL, M. D. CHAIRMAN.

Dr. C. L. Dana, on the part of the Academy, read a tribute of respect to the memory of the late D. B. St. John Roosa.

Symposium: The Diagnostic Value of Symptoms of the Upper Respiratory Tract in General Disease.

a. In Nervous Diseases. By THOMAS J. HARRIS, M. D.

Affections of the nervous system presented symptoms of value and importance from a diagnostic standpoint in the throat and nose, whether they were true organic affections or only functional disorders, such as the so-called neuroses. Of the two, the organic affections were the more important, and showed themselves chiefly in the larynx, and were in the form of either sensory or motor disturbances. The motor manifestations represented either an excess or

diminution of action. Excess of action was seen in spasms which might be tonic or clonic. Tonic spasms might take the form of spasms of the larynx or laryngeal crises, or ictus laryngis; clinic spasms might take the form of spasms as twitchings or tremors. When an organic nerve lesion was present it was most frequently one of diminished action or paralysis. These paralyses might involve the superior or inferior laryngeal nerve. A paralysis of the former was rare, while a paralysis of the inferior laryngeal nerve almost without exception involved the crico-arytenoideus posticus at the onset and only at a late stage, if ever, attacked the adductors. This was a striking fact, and its clinical significance was at once apparent. A posticus paralysis had to do with respiration.

After a hasty review of the present day views on the innervation of the larynx, he considered how they might make use of them in a practical manner in diagnosis. This applied chiefly to affections of the medulla and below, although it was true that cerebral hemorrhage, tumors, abscess, gummata and pseudo-bulbar palsy might produce motor changes in the larynx when extensive enough or properly situated. (1) Tabes dorsalis at times showed symptoms in the nose, such as disturbances of the olfactory nerve, resulting in anosmia or parosmia, but usually they were limited to the larynx in some form of paralysis. Unilateral or bilateral posticus paralysis might be regarded as characteristic of tabes. In the bilateral form the one symptom was gradually increasing inspiratory dyspnoea, with expiration unaffected. Even more interesting were the various forms of laryngeal motor irritations in tabes. These included ataxia of the cords, giving rise to the characteristic scanning speech. (2) Laryngeal crises might occur early in the disease, like the palsies, and might even precede the ocular manifestations. The laryngeal crisis was characterized by the simultaneous involvement of all the respiratory muscles, and so differed from an ordinary spasm of the larynx with the cords immobile in the median line and their free borders taut; this would mean in all probability a central nerve lesion. If the picture should change in time to one showing the cords in the so-called cadaveric position, i. e., midway between inspiration and expiration with concave borders, they would know that the entire recurrent nerve had been involved, pointing to the progressive character of the lesion in the bulb. Sensory disturbances in connection with tabes were rare. (3) Multiple sclerosis of the brain and spinal cord would produce symptoms in the larynx almost if not quite as frequently as tabes. The common symptom

present was a delay in the muscular action. This might take the form of tremor in phonation, and an abnormal tendency to voice fatigue. There would be noted also the scanning speech, with frequent interruptions by high-pitched explosive sounds. The voice was often raspy or hoarse. Occasionally they met with true paralysis, usually of the adductors. (4) Syringomyelia presented laryngeal symptoms, also motor in nature, and reduced reflex irritability of the posterior pharyngeal wall. (5) Progressive bulbar paralysis was especially characterized by symptoms referable to the tongue, lips and larynx. The laryngeal symptoms did not appear with any such constancy as did the symptoms referable to the tongue. (6) Progressive muscular atrophy very commonly showed symptoms in the larynx or pharynx, and these were usually of the nature of a paralysis, either of the entire throat and larynx, or more often of the larynx. (7) Neuroses, the functional nervous affections, often showed themselves in the upper air passages, and the two most commonly met with were paralysis agitans and hysteria. Paralysis agitans in a considerable number of cases gave rise to laryngeal symptoms, and usually of a motor character. In hysteria nose and throat symptoms were frequently met with, and these might be either sensory or motor. Sensation was often affected. (8) Anaesthesia of the mucous membrane of the nose and pharynx was frequent. The septum was wont to escape, as well as the larynx. (9) Hyperaesthesia and analgesia of the pharynx was quite frequent, and took the form of a choking sensation, tickling, feeling of a foreign body and the familiar globus hystericus. (10) Disturbances of co-ordination during phonation were common. Dysphonia spastica was the term used to describe the spastic form here. After considering a few other conditions which gave symptoms in the upper air passages, Dr. Harris concluded that two things had been shown, viz.: (1) That pharyngo-laryngeal symptoms in nervous diseases were deserving of more attention on the part of the neurologist than they had received up to the present time; (2) that no field offered greater opportunity to the laryngologist for original study and research than that which embraced the innervation of the larynx.

b. In Syphilis and Tuberculosis. By FRANCIS H. BOSWORTH, M.D.

Tuberculosis manifests itself in the upper air passages—in the nose, pharynx and larynx. Tuberculosis of the nose is a clinical and pathological curiosity, and presents no special clinical or diagnostic

symptoms of value. The question of tuberculosis in the lower pharynx, the larynx, and the buccal cavity is mainly of interest in that it gives a certain clinical insight into the virulence of the disease, and the diagnosis is confirmed by the pathologist. As a rule, the nearer the tuberculous process involving the upper air tract approaches the external world, the more virulent and hopeless the disease seems to be. Thus, the fatality of laryngeal, pharyngeal and lingual tuberculosis seems to show an increasing gravity in the order given.

When, however, we consider the manifestation of syphilis in the upper air tract, the story is entirely different, and the diagnosis is based upon ocular inspection. When it invades the mucous membrane of the upper air tract, in the majority of cases it pursues a regular and orthodox course, and avoids the eccentricities and idiosyncrasies which characterize its invasion in other portions of the economy. The mucous patch is the result of a deposit of the inflammatory corpuscles in the epithelial layer of the mucous membrane, causing appearances with which all are familiar; occurring five or six weeks after the primary sore, or being delayed often for months, and, in rare instances, characterizing the history of the disease. The second lesion is the superficial ulcer, in which the inflammatory corpuscles are deposited not only in the epithelial layer, but also in the mucosa, probably giving rise to a coagulation necrosis which very rapidly breaks down, the resulting ulcer involving the epithelium and the mucosa of the membrane. This presents the typical and characteristic appearance of the shallow ovoid ulcer, with necrotic tissues, a purulent secretion, and a very limited areola. The third manifestation is the gumma, in which the deposit is not only in the epithelium and mucosa, but in the submucous tissues beneath, such as the periosteum, or whatever tissues may underlie the mucous membrane. This breaks down more or less rapidly as the result of the coagulation necrosis; the narrowing of the blood vessels causes a breaking down into the so-called deep ulcer, or tertiary ulcer, with its ragged, crater-like border, deep-seated, dark-colored areola, profuse discharge of pus, and necrotic tissue. The nasal cavity is the home of the gumma, but, curiously enough, it is rarely observed, owing to the fact that the necrosis and deep ulcers follow so rapidly that they do not come under observation. But three cases are recalled in a somewhat large experience. In the vast majority of cases the first recognition of the disease here is a necrosis of the vomer, or, in rare instances, of the turbinate bones, with the char-

acteristic symptoms of fetid odor filthy green crusts, and the presence of necrosis detected by means of the probe. Necrosis of the nasal bones is almost pathognomonic of syphilis. Many entertain the view that syphilis of the nose or other portions of the air tract is a progressive disease. The writer thinks that this is to be questioned. According to his view it is rather an explosive disease. The poison lurks in the system for months, gathering strength, virulence and activity, without manifesting itself in any form, until finally it suddenly invades one of the tissues of the body, depositing these round corpuscles. Having accomplished this, the outbreak becomes for the time being a local disease, the gumma in the nose breaks down into deep ulcers, which involve the whole mucous membrane, as well as the periosteum, etc., etc.

The larynx is a favorable point for the study of syphilis, but the diagnosis is oftentimes very difficult. The laryngeal symptoms are not easily assigned to the various forms which it assumes—the primary sore, erythema, mucous patch, superficial and deep ulcers. In the majority of the cases we apparently have to do in the larynx with what may be called "laryngitis deformans," an irregular, diffuse thickening of the mucous membrane, as the result of a small ulceration, with cicatricial sequelae, which seriously impairs the function of the larynx, but which presents appearances that are often puzzling. Furthermore, we often have cases in which the main reliance in confirming the diagnosis lies on the amenability to the specific treatment. Very often this fails to aid us.

When we come to the consideration of faucial syphilis—the manifestations in the lower pharynx, faucial pillars, tonsils, palate and uvula, we come to the consideration of the region which is the most favorable of all portions of the economy for the study of syphilis, and where it is readily recognizable. It runs a regular course, manifests no eccentricities, and develops no deceptive appearances.

From a clinical point of view it is a rather curious feature of syphilis that it manifests a marked tendency not to transcend anatomical boundaries. Syphilis of the nose very rarely extends to the skin in front or into the pharynx behind; syphilis of the lower palate very, very rarely extends beyond the border of the soft palate above or the larynx below; while syphilis of the larynx, even more than cancer, shows a disposition to remain a laryngeal outbreak.

In concluding, the writer of the paper laid special emphasis upon three points:

(1) The larynx, beyond all other regions of the body, is a favorable site for the study of syphilitic outbreaks, and the one in which less than other regions they are liable to be mistaken.

(2) The hesitancy of syphilitic outbreaks to transcend anatomical borders.

(3) The fact that an outbreak of syphilis is self-limited and shows no tendency to extend.

In other words, the explosive theory of syphilis is one that is well worthy of consideration.

c. **In Rheumatism, Gout and Diabetes.** By EMIL MAYER, M. D.

To be published in full in a subsequent issue of THE LARYNGOSCOPE.

DISCUSSION OF PAPERS OF DRS. HARRIS, BOSWORTH AND MAYER.

DR. LAMBERT said that there was no more unsatisfactory condition in medical diagnosis than that of the differentiation between rheumatism and gout. There is no pain in the muscles, or pain in the joints, or pain in the throat—whatever be the cause—that is not called rheumatism, and there is no pain in any part of the body that is not at times tucked into that asylum. Most of the conditions called rheumatism do not belong to that category, and many mistakes are made in the diagnosis of gout and rheumatism. The two are widely different, though both show manifestations in the tonsils and upper air passages. Rheumatism is an acute infection, gout an auto-intoxication from the inhibition or perversion of some function. The reason that we hear of so many cases of rheumatism manifesting themselves in the upper air passages is that most of such cases are really gout. It is very interesting to hear discussions concerning the nasal and tonsillar entrance of rheumatism to the body, and yet in a service at Bellevue Hospital he has been for a number of years seeking for cases of polyarticular joint rheumatism that show a tonsillar infection or give a history of infection in the tonsils. In adults this has not been a common occurrence. There have been cases occasionally in which there was distinct pain in the tonsil, distinct cardiac involvement, and later joint affections. Most of the cases of pharyngitis and tonsillitis with joint inflammation have been cases of gout.

The cases quoted by Dr. Mayer, in which aspirin cured the rheumatism, are of interest, for in his experience aspirin has failed to give relief in rheumatism, but it has cleared up mild attacks of gout and has controlled the pain in severe attacks. It would seem that the reporter of these cases had mistaken gout for rheumatism. In children he thinks there are many more cases than among adults

in which the tonsil infection precedes the manifestation. That may be due to the fact that the lymphatic tissues in children are better filters and hold the infection better, simply from the difference in the anatomical structure, as has been shown by Borrel.

Since Dr. Mayer had asked him to discuss this paper, he had taken more than usual care in observing a number of rheumatics, to see if in any there was any visible manifestation in the throat, or if any complaint or evidence of trouble in the throat existed before the true rheumatism came on; and only those in which the large joints were involved were counted. There have been the usual number of different joint infections, and the usual number of cases of gout, but not in a single instance during the last three months in Bellevue has there been any evidence that a rheumatic patient has complained of his throat. We know that germs can pass through the lymphatics of the abdominal cavity and leave no manifestations, and it may be that they can go through the lymphatics of the throat and tonsils and leave no manifestations.

Dr. Leszynsky said that as the larynx receives its innervation from the vagus and accessorius nuclei, particularly through the pneumogastric nerve and its branches, any pathological process in the region of the nucleus ambiguus or in the course of this nerve, will occasion tremor, spasm or paralysis of laryngeal muscles. This is known to occur in various affections of the pons and medulla, in tabes, syringomyelia, disseminated sclerosis, progressive spinal atrophy, etc. Moreover, such laryngeal symptoms also arise in the course of paralysis agitans, convulsive tic, asthenic bulbar palsy, and hysteria. In the so-called polioencephalitis inferior, or bulbar paralysis, in which such symptoms are characteristic and essential, the larynx is never affected alone, without involvement of the lips, tongue, palate or pharynx. It will thus be seen that all degenerative or inflammatory diseases of the cerebro-spinal system are more or less frequently accompanied or complicated by implication of the bulbar nuclei.

The diagnosis of disease of the nervous system cannot be made from the presence of an isolated laryngeal or pharyngeal paralysis. While the latter condition may be highly suggestive, in no sense can it be considered pathognomonic. When laryngeal tremor, spasm or paralysis is the result of such general disease, other indications will invariably be found. As tabes is the commonest type of organic nervous disorder, further remarks will be limited to this affection. A person may have suffered for years from any tabetic

laryngeal crises without any of the obtrusive symptoms of tabes—such as inco-ordination, pains, etc.—yet upon exmination one may find unmistakable signs of the disease. Such a patient is now under my care. He is a lawyer, 49 years of age. Five years ago he had a severe attack of whooping cough, lasting six weeks. At that time one of the children in the household was also affected. Paroxysms have recurred at intervals of several days or weeks ever since. Probably the pertussis excited the subsequent laryngeal crises. While it is an interesting fact that quite a large number of chronic tabetics have disturbances of the innervation of the laryngeal muscles, in the majority of instances this is of minor importance as compared with other pronounced manifestations. Exceptionally a laryngeal crisis has been known to terminate fatally. Transitory laryngeal paralysis is rare, in contrast with paralysis of the ocular muscles. In the cervical type of tabes, in which arms are first affected, laryngeal crises and posticus paralysis with bulbar symptoms are more likely to arise, the lower extremities becoming involved later in the disease. Let me suggest that loss of the knee-jerks with preserved muscular power in the lower extremities, and loss of the pupillary light reflex with preserved vision, when found combined, may be interpreted as presumptive evidence of tabes or cerebro-spinal syphilis. It should always be borne in mind that in many cases of early tabes there is no ataxia whatever.

Finally, the diagnosis value of symptoms of the upper respiratory tract in the various diseases of the nervous system, depends entirely upon their correlation and association with other symptoms.

Dr. Bulkley said that he was sorry to be obliged to take issue with Dr. Bosworth in regard to the ease of determining the diagnosis of syphilis in the mouth. He has seen many instances where a lesion in the mouth was supposed to be syphilis, but was not; and many lesions which were found to be syphilis where that diagnosis had not been made. It is probable that those who do not see much of dermatological practice hardly realize that there are a half dozen different conditions in the mouth seen in connection with diseases on the skin; for instance, there are eczematous lesions about the mouth and lupus erythematosus is occasionally seen in the mouth. He had seen a great deal of leucoplakia, which was commonly thought to come only from smoking, but is occasionally found in females, though almost invariably in smokers, white patches, etc., which were constantly mistaken for a manifestation of syphilis. He had also seen a great many cases where aphthous sores in the

mouth had been regarded as syphilis, and in some of these cases the diagnosis was somewhat difficult. In many of these he has simply used therapeutic tests, avoiding syphilitic treatment, and giving other remedies, and had seen them pass away entirely, evidently being simply innocent non-specific lesions. A certain small amount of lupus in the mouth might be mistaken for syphilis, and finally supposed syphilitic lesions sometimes turn out to be epithelioma.

Coming to the gummata, we constantly find mistakes in this connection. Early epithelioma is often touched with nitrate of silver, on the supposition that it may be syphilitic, and it thus often drifts into a serious lesion. Some cases of epithelioma can with difficulty be distinguished from syphilis.

One thing has not been mentioned this evening about syphilis, viz., the tonsils being the site of primary infection. Syphilis of the tonsil, primary chancre of the tonsil is much more common than most people think. Some ten years ago he had the pleasure of reporting fifteen undoubted cases of tonsillar chancre, and since then he has seen a number of other instances. He had, of course, seen any amount of syphilitic lesions in the throat and mouth, superficial erosions, etc. Chancre about the mouth is also very common. Years ago he had reported the histories of over 50 cases of chancre of the lip, and he has seen thirty or forty cases since then, also many on the tongue. Chancre in the nostril is not extremely uncommon. He had seen several cases, where the primary sore was situated in this locality.

Lesions in the upper air passages, therefore, are a very important element in the diagnosis of syphilis. At the St. Louis clinic, years ago, he saw Fournier present a patient who had palmar syphilis, and also lesions on the tongue; having the patient hold up the palms by the mouth, he exclaimed, "diagnosis conclusive," in view of what had been said the speaker thought this a very dangerous proceeding, as the trouble on the palms might be a chronic eczema, and the lesions in the mouth simply aphthous sores.

It is not well to generalize too much about any of these lesions in the upper air passages.

DR. SIMPSON said that as he understood the Symposium to-night the subject was the diagnostic value of the conditions of the upper air tract in relation to general diseases,—not so much the description of the lesions as we find them. Dr. Bosworth spoke of the importance of biological examinations and the relegation of the

clinician to the background, but the time has not yet come when we can absolutely dispense with the clinical side of the question. Some clinical manifestations are as absolute as any of the laboratory findings, and the laboratories are often as dependent upon us as we are upon them.

He was very glad of the point brought out by Dr. Lambert, for it makes a connection between the practitioners in general and the specialists. The speaker has not noted the great clinical relation between acute rheumatism and tonsillitis, although he had made some investigations clinically, as Dr. Lambert has done. At times he has questioned his patients, who had marked tonsillitis and no signs of rheumatism, and in many cases who had acute rheumatism for years, and no signs of tonsillitis. As he inderstood the subject of the evening, the question was how will the lesions of the upper respiratory air tract help in diagnosticating general diseases.

Unilateral paralysis of the vocal cord is one of the earliest symptome we have of aneurysm. He had seen a number of cases where aneurysm had been diagnosed by this one point. It produces pressure, and in a great majority of cases it will be an aneurysmal pressure.

Also a child may come with paralysis of the soft palate, and it will be found that he had a slight history of sore throat, and the case be one of post-diphtheritic paralysis.

Another point is the importance of examining the throat in cases of late syphilis. Tertiary syphilis may show itself in cerebral symptoms, and one can often be enlightened by an examination of the throat and finding evidence of tertiary syphilis there, it being one of the few diseases which leaves a cicatrization in the throat.

Another point of diagnostic value from the neurological standpoint is in the various forms of neuralgias of the face. Unquestionably the interest and the recent investigations in sinus diseases have given us etiological factors in many cases of neuralgia of the face. A case in point was one of supra-orbital neuralgia, which had resisted all treatment. An X-ray photograph was made, and a perfect picture of sinus involvement was obtained. Operation was performed and a large quantity of pus was drained out. The neuralgia was purely of the frontal sinus origin. This was a marked instance of the diagnostic value of a lesion of the upper respiratory tract.

He agreed with Dr. Bulkley that it is very difficult at times to make a clinical differentiation in the various ulcerative conditions of the throat.

Dr. Simpson called the attention of the members to a recently published prize essay by Dr. Frissell of this city, which presented the best exposition of the etiology of rheumatism that he has seen.

Dr. T. J. Harris said that in one form of syphilis of the nose he had seen three or four patients who complained of all the symptoms usually associated with hay-fever—sneezing, obstruction and watery discharge. They gave no history of syphilis, but suggested that they were cases of such neurosis as asthma. He had even thought that it was ethmoiditis; but they were speedily cured by antispecific treatment. Possibly the explosive attack was in that part of the nose; but the condition was such that it was entirely relieved by anti-specific treatment.

Dr. Bulkley said that he could easily understand how a small gumma might produce symptoms of asthma, and how the ethmoid might be affected. Such cases would bear out his contention. We are justified in such cases in administering anti-specifics for the purpose of making a diagnosis.

Dr. Emil Mayer said that the discussion was well worth while if it showed what differences of opinion there still exists as to what constitutes gout and what rheumatism.

For his own part he felt that he must accept the diagnosis of so large a number of observers as he had found in the voluminous literature, and of which he had presented a very small part from the most recent writings.

The main point at issue was whether the infection enters by way of the mouth, and if so, does it find entrance through the tonsil in the majority of instances?

For this he had presented rather fully the statements pro and con, and while the majority is not necessarily always right, its opinion seemed to the speaker justified, namely, that it should be answered in the affirmative.

To show this the speaker mentioned the case of a young man whom he had seen after an attack of syncope, and found him with an endocarditis. He had a history of a follicular tonsillitis a few weeks previous and before that he had never been ill, a fact the speaker knew well, for he had treated him since his birth. One other case was a woman 40 years of age, with endocarditis. She had a tonsillitis, and cultures showed streptococci and staphylococci, the former predominating, four days later she had a typical endocarditis.

Dr. Simpson called the attention of the members to a recently published prize essay by Dr. Frissell of this city which presented the best exposition of the etiology of rheumatism that he has seen.

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY.

Regular Meeting, April 14, 1908, A.

A. H. ANDREWS, M. D., PRESIDENT.

PRESENTATION OF CASES.

Xanthoma. By JOHN EDWIN RHODES, M. D.

To be published in full in a subsequent issue of THE LARYNGOSCOPE.

Tuberculous Laryngitis. By GEO. E. SHAMAUGH, M. D.

Dr. Shambaugh exhibited a case of tubercular laryngitis in a man 50 years of age. Symptoms of hoarseness began about a year ago, and at no time until within a few weeks has he suffered from any other symptoms. Recently there has been some slight pain on swallowing. No evidences of tuberculosis were found in any other part of the body. The condition was one involving only the right side of the larynx. There was extensive nodular infiltration with ulcerations occupying the false cord and extending to the arytenoid cartilage. There was very little reaction about the lesion such as oedema and redness. The vocal cord is freely movable and is apparently not involved. The microscopic sections made from tissue removed from his throat were exhibited, showing typical tuberculous infiltration with numerous giant cells.

Chronic Suppurative Otitis Media, with Thrombosis of Lateral Sinus and Jugular Bulb, Erosion of Facial Canal and Cerebellar Abscess. Operation and Recovery. By NORVAL H. PIERCE, M. D.

DISCUSSION.

DR. JOS. C. BECK: There were two points of interest in this case; first, the presence of cerebellar abscess without symptoms; second, the chill. In a case recently under my care I made a diagnosis of labyrinthine disease from symptoms such as nystagmus, staggering gait, etc. On exposing the labyrinth, I found it unaffected, but there was a perisinusoidal affection and compression of the cerebellum, which was producing these symptoms. When I cleared up this condition, the symptoms disappeared. Therefore, may not the nystagmus in Dr. Pierce's case have been one of the symptoms of cerebellar abscess?

As to the second point, the chill, I have learned by experience, when this chill has occurred, to suspect sinus trouble and I expose the sinus at once. I have operated recently on such cases with gas-oxygen anesthesia to my absolute satisfaction. There is no danger of collapse and prostration. I would like to ask Dr. Pierce whether the facial paralysis cleared up.

DR. FRANK ALPORT: Would not the fact that there was evidently labyrinthine involvement in this case tend to lead one to suspect as soon as such labyrinthine involvement became manifest, that there was also a purulent infection of the brain which, indeed, proved ultimately to be the case. It should not be forgotten that the labyrinth is one of the principal avenues by which infection reaches the brain cavity.

In all cases of mastoid or brain infection I invariably insist upon frequent blood examinations, both microscopical and bacteriological. For instance, the finding of streptococci in the blood would be a strong argument in favor of a septic intracranial complication. Careful and irequent blood counts are also useful, especially after the mastoid has been opened and we know there is no retained pus in this cavity. Under such conditions a high percentage of polymorphonuclear cells would certainly lead one to suspect intracranial involvement. I do not regard the blood count as infallible, but I nevertheless have much respect for its findings.

I agree with Dr. Pierce in the deductions he has drawn in this case; that is, I think it would have been better if he had at his initial operation broken through the bony covering of the sinus and ascertained the conditions within. It certainly would have saved much suffering, danger and time in this case, and would have only taken a very few more minutes of operative time. I am firmly convinced that in all doubtful cases the sinus and the dural covering of the middle lobe of the brain should be fully exposed, and believe this to be the usual practice amongst aural surgeons. A positive diagnosis in many of these cases is extremely difficult and we need all the evidence and side-lights we can obtain in order to perform our duty to our patrons.

DR. GEO. E. SHAMBAUGH called attention to the fact that the nystagmus and ataxia which occurs in cases of cerebellar abscess are not unlike the same symptoms arising from a pus infection in the labyrinth. The cerebellar abscess of otic origin arises usually from an extension through an involved lateral sinus, or by way of the labyrinth. If the cerebellar abscess follows secondarily upon suppuration of the internal ear, one may be able to diagnose the occurrence of a cerebellar abscess by finding a complete destruction of hearing and an absence of increase in nystagmus and vertigo by the Barney method of syringing the external canal with hot and cold water.

DR. PIERCE, closing the discussion: The nystagmus can be accounted for by the findings in the labyrinth. It was labyrinthine nystagmus because the condition disappeared after operation on

the labyrinth before the cerebellar abscess was opened. The facial paralysis has disappeared almost completely. There is very little lack of movement on that side of the face.

A blood count was made a number of times, but I place less and less dependance on it as I go on with this work. In positive cases we do not have to make it, and in the doubtful cases it is too uncertain and not always of value.

This was undoubtedly a case of sepsis, but the question was,—where was the pus being poured into the venous channels. On account of the condition of the patient and the fact that the sinus appeared to be normal, I deemed it best to delay opening it.

Salivary Calculus. By HENRY GRADLE, M. D.

Dr. Gradle showed a salivary calculus about the size of a large pea. The patient had had attacks of painful swelling of the submaxillary gland lasting weeks at a time. Even between the attacks the gland was enlarged and somewhat tender. A concretion could be felt in the duct underneath the tongue. It was scooped out after an incision under cocain injection. Uneventful healing. Gradual return of the salivary gland to its normal condition in about a month.

The Simulation of Mastoid Disease by Furuncle of the External Meatus and Peri-Auricular Abscess. By HENRY GRADLE, M.D.

To be published in full in a subsequent issue of THE LARYNGOSCOPE.

DISCUSSION.

DR. J. HOLINGER: Although the differential diagnosis between mastoid abscess and periauricular abscess is exceedingly difficult, it can be made. I often give this question in competitive examinations, and while the answer appears to be an easy one, it is not. In three cases of swelling of the parotid gland the diagnosis was extremely difficult; in another case a mastoid operation became necessary because the mastoid was involved later on. The parotid was incised for pus. The temperature increased from 101° to 103° F. The inflammation of the gland and mastoid was influenced favorably by interdicting the administration of fruit juice.

DR. NORVAL H. PIERCE: The differential diagnosis between the swelling back of the ear caused by furunculosis of the external auditory canal and swelling behind the ear from mastoid disease, is very simple. In the former, there is *edema* of the soft parts back of the ear, and in the latter, there is *infiltration*. In the one case (edema) the swelling pits on pressure and in the other (infiltration) it does not. In infants there may rarely be some edema in mastoid disease, but it almost never occurs in adults and is not so

marked. A case happened in my experience where a consultant in a large city was called to a small country town to operate for mastoid abscess. The patient was a young adult complaining of pain in and about the ear, fever, and with marked swelling behind the ear; the auricle was displaced downward, outward and forward, and the external auditory canal was so filled up that a view of the tympanic membrane could not be had; but on the mere fact that it was edema and not infiltration back of the ear, the diagnosis was correctly made.

DR. O. T. FREER: An old gentleman had repeated swelling of the parotid, non-septic in character, occurring about once a week, and looking like a case of mumps. I knew that he had a recurrent parotitis, but could not discover the cause. A prominent surgeon said that there was dead bone in the jaw, which he wanted to remove, but the patient objected. He came back to me and consented to an opening of the duct of the gland. I took out a fish bone, and the patient promptly recovered.

DR. FRANK ALLPORT: I agree with Dr. Pierce as to the diagnostic significance of edema and infiltration, but I have seen edema present in both cases. As a rule, the diagnosis of furunculosis is an easy one, and yet I can readily understand how one can be misled. I have had cases where I had to hold the diagnosis in abeyance, especially when it is not a simple case of furunculosis; where the starting point is a middle ear involvement, with more or less chronic discharge, followed by infection of the canal producing furuncles.

DR. J. C. BECK: I want to call attention to a positive diagnostic point, and that is the skiagraph. In furunculosis the mastoid is clear, except when there is also mastoid involvement, as in *Case* 3. The skiagraph shows not only the involvement of the mastoid, but the degree of involvement.

DR. A. H. ANDREWS: I find the transilluminator very useful in doubtful cases.

DR. GRADLE, closing the discussion: Dr. Pierce's differential diagnosis applies to many cases, but what I wished to point out is that there are exceptional cases that are very puzzling for the time being, especially when there is no swelling with existing pain and tenderness. In the third case, I certainly would have preferred to operate, but, unfortunately, the patient must be consulted.

Case of Headache Caused by Non-Suppurative Frontal Sinuitis.
By FRANK BRAWLEY, M. D.

To be published in full in a subsequent issue of THE LARYNGOSCOPE.

Chondroma and Osteoma in Faucial Tonsils. By LORENZO N. GROSVENOR, M. D.

Microscopical examination of a pair of tonsils removed from a lady of 27 years. In one was found a circle of cartilage with many areas of ossification; in the other tonsil was a triangle of cartilage and bone.

One group of writers found the tip of styloid process protruded into the tonsils. Another group claimed the condition was due to metaplastic changes. Still another group considered that the cartilage and bone originated in abnormal development of cartilaginous rests of the second bronchial arch.

In study of my case, I draw the following conclusions:

1st. The cartilage and bone is not part of the styloid, for we cannot palpate the stump of the styloid process between inferior maxilla and the vertebral column. Here, too, there is not a single nodule of cartilage or bone, but a ring or triangle.

2d. The condition is not one of metaplastic changes, for there was no clinical history or pathological findings that would cause such changes.

3d. The logical conclusion, therefore, must be that the cartilage and bone found in these tonsils was developed from a matrix of unused or displaced embryonic cells derived from the second bronchial arch. A. A.

Lantern slides were exhibited by Dr. Grosvenor, Dr. J. Holinger, G. W. Boot, O. T. Freer, L. W. Ostrom and Geo. E. Shambaugh.

DISCUSSION ON DR. BRAWLEY'S PAPER.

DR. O. J. STEIN: I believe that Dr. Brawley cured his patient by the work done on the naso-frontal duct, and not by the excision of the middle turbinal, which, he says, is the usual method.

DR. BRAWLEY: This is the one exception.

DR. N. H. PIERCE: Did I understand you to say that you cauterized the naso-frontal duct with trichloracetic acid?

DR. BRAWLEY: Yes.

DR. PIERCE: Would not that cause stenosis?

DR. BRAWLEY: Not if it is followed by frequent and persistent probing.

THE AMERICAN LARYNGOLOGICAL ASSOCIATON.

Twenty-ninth Annual Congress. Washington, D.C., May 7 to 9, 1907.

A. W. DeROALDES, M. D., President.

(*Continued from the May Number, page* 416.)

Large Tumor of the Laryngo-Pharynx Removed by Subhyoid Pharyngotomy.

Age of patient 51 years, developed a cough at 18 which persisted. At 36, became hoarse after grippe; at 45 breathing became slightly labored, and in a short time she had attacks at night when there seemed some danger of her suffocating.

Two years ago she started to choke when eating. A laryngoscopic examination revealed a large mass completely filling the laryngo-pharynx. The large size of the tumor and some adhesions made removal through the mouth impossible. The patient was taken in the Manhattan Eye, Ear and Throat Hospital, and a preliminary tracheotomy performed. About three weeks later I performed sub-hyoid pharyngotomy and removed a large fibroid tumor. The recovery was complete. A. A.

The Problem of Asepsis in Routine Office Work. By THOMAS HUBBARD, M. D.

(*Published in full in* THE LARYNGOSCOPE, *July*, 1907, *page* 519.)

DISCUSSION.

DR. KING: I have an instrument that I should like to show in connection with this device for the sterilization of sprays in office-practice. It causes annoyance and difficulty, and often delay, to keep the spray-tips thoroughly sterilized. This little sterilizer is attached to the back part of the cabinet. On the back part is a rack for the sprays. There is a stand arranged to fit on the back of the cabinet, with the gas-jet underneath for the heating.

I use the same kind of sprays that Dr. Hubbard showed with his instrument. When they are setting in the rack, the ends of the spray project into the sterilizer. Being just above the level of the water, they are being steamed all the time. The amount of gas used is insignificant, and does not vitiate the air. You keep a guard underneath to protect the bottles; and take it off, if you want the spray heated to a warm temperature. The bottles are liable to crack, if the heat is great on one side.

The slot in the sterilizer corresponds to the height of the ends of the sprays; so, when thrown into the rack, there is no difficulty

in fitting them in easily. It is devised so as to hold eight or nine sprays in the ordinary cabinet-rack. They not only keep thoroughly sterilized, but the water is constantly boiling at a very high temperature; although I have no scientific measure of the temperature, and of the amount of sterilization resulting. When used not more than once or twice an hour, they are being sterilized all the time.

The sterilization by means of steam has a double advantage: if you put the point of the sprays into the boiling solution, they are likely to take up some of the water; and this gets into the spraying-solution, either by capillary attraction or by syphon-action, the spray soon becoming half filled with water. Sterilizing with steam also keeps the sprays pretty well cleaned out. They are always dripping with condensed steam, and are thoroughly washed of mucus; so they do not become stopped up, as in the dry method. If the mucus dries in the lumen of the spray, you have to run wire through it.

This device serves the purpose admirably in office-practice. It is made by a local instrument-maker, and consists of an ordinary sterilizer with a slot cut in it.

I was very much interested in Dr. Hubbard's paper, especially in regard to the sterilization of the instruments and of the air. I have not been quite so particular as he has been, but I think it is a very good idea. In conversation with him, he told me that in the filtration of air there are so many impurities taken up by the filters that he puts on over the ends of the sprays, that we must often project a good many of these germs into the fields of operation—especially wound-surfaces. We have adopted the method of using these little tongue-napkins. I believe Dr. Hubbard uses the paper-napkins instead. The dental napkins, four or five inches square, are, however, very convenient. They cost less than half a cent apiece, and are practically always sterile; though you can sterilize them, if you desire to do so.

Dr. Arthur A. Bliss: We are all very much indebted to Dr. Hubbard for presenting this paper. He has given me many new ideas as to office asepsis. I have not been so careful as he is; and I think it is surprising how little infection any of us have had in our work, yet I do not think many of us have carried the details of office-housekeeping to such an extent as Dr. Hubbard has related; but that is no excuse for not doing so. All these

details are of importance, especially the practical method of obtaining cleanliness in our office-work.

Dr. W. F. Chappell: We are certainly all indebted to Dr. Hubbard for taking such great care of the patients. I had hoped that he would also suggest some method by which the doctor could be taken care of. I had an unpleasant experience of that sort this winter:

I am sure that all of us, in using the sprays and the syringes for the nose and throat, find that the patients often cough something on to the doctor. I had this forcibly brought home to me this winter. An old case of peritonsillar abscess was sent to me, and I found a large tumor down in the inside of the pharynx, which, after examining, I found to be an abscess. On opening this, we had the bowl ready for her to expectorate into; but the pus, running out quickly, frightened her; and she jumped up, and expectorated the contents into my eyes. I immediately washed them out, and took the ordinary precautions; and, always having been very well and strong, I thought that no germs could get into me. Five days afterwards, half an hour after having felt perfectly well, I had a severe chill. I went to bed; and during the night, my eyes and face began to swell. I had a septic dermatitis, extending from my eyes and ears down to my neck, and lasting five days.

After this experience, I certainly felt that hereafter I should very well remember the danger to the doctor in our office work. I think that there should be some way by which we could be protected. It is very rarely that a laryngologist goes through his lifetime without something of this kind happening to him. For use in such cases, I think there should be something with which to protect ourselves.

Dr. Richards: Ordinary automobile goggles, made of gauze, and sufficient to cover the face, could be designed for this purpose. This arrangement would be cheap and it could be sterilized. The doctor could wear it whenever infection was thought possible.

Dr. Myles: A subject like this is very broad and wide; and, of course, Dr. Hubbard's known genius for practical things makes him a very good leader. I dare say that each one of us will improve in our method of protecting ourselves and our patients by using the newly suggested devices as soon as possible. A little experience-meeting of this kind will give us what we are looking for most quickly.

In operating, I am frequently covered with blood from the top of my head to the soles of my feet. There is a peculiar kind of oiled-silk gauze that I use to cover the patient and myself. It is very thin, and gives quite good protection from the fluids.

I also have on hand half a dozen panes of glass, and a nurse holds one of them in front of my face while operating. In these coughing, gagging cases, when extensive dissections are made around the throat, and even in laryngeal operations, these are of use. I often need three or four before an operation is finished. They are simple, cheap, and easily washed and sterilized. There are glass shields that drop down from the ceiling, but these cannot be quickly changed. The simple pane of glass solves the problem better than anything else.

Regarding asepsis in the office, we are just on pioneer ground. I have my instruments boiled, the same one, perhaps, a dozen times a day. It is an annoyance, but I do it on general principles. Our regular office-attendants are not quite accustomed to this work, and are not so careful as they should be.

It is true that we have no definite knowledge of the occurrence of much sepsis in office-practice, but it is possible that there are some forms of septic conditions that are not localized in their manifestations. Sometimes, after operations, the patients do not do so well as we should like in a general sense; and this may be the result of contamination. If someone would take up the subject and give us his conclusions as to a practical and economical way of securing asepsis, I think it would be a great advantage to the profession at large. It can be done with the proper paraphernalia; but the expense would be so great that the fees would have to be too large for the patients to stand. The idea is to bring it within the pale of reason.

The asbestos-packed syringe is the only one I find that can be properly treated. We often do inject into the accessory sinus cavities material that will be a source of danger. This happens particularly in the early part of operations in which we curette these sinuses. For this reason, I have tried to avoid many applications on these wounds. I should rather trust them to nature than to our ideas of cleanliness. There are too many sources of infection encountered in the process. A man takes his finger and puts the cotton on a swab, and then runs it up to the fresh wound. It comes in contact with his fingers and the patient's nose, both more

or less septic. I have seen much better results follow my present way of dealing with such cases than have followed the previous indiscreet use of many applications.

DR. MAKUEN: I should like to ask Dr. Hubbard whether he has had any experience with the metal-piston syringe.

DR. HUBBARD, closing: No; but my colleagues have. They are very satisfactory, but they need a great deal of attention to keep them clean and in working order. You cannot leave a corrosive solution in them without ruining them completely. The asbestos-packed syringe is the best. Those packed loosely are much better for delicate work—one that is as long as possible, and works with as little friction as possible. That packed by Ermold is the best for ordinary purposes.

Dr. Chappell's inquiry has been answered by Dr. Myles better than I could have answered it. When there is a reasonable chance of doing an aseptic operation, I think we should go to the extreme care of wearing rubber gloves or sterilizing our hands thoroughly before attempting it. Dr. Myles has hinted at this; and I find that Dr. King wears rubber gloves, as a rule—partly for his own protection. I thank you for the discussion of my paper.

A Review of the Methods in Use for the Removal of Adenoids, with a Description of a Method which is Thorough, Rapid and Safe. By GEORGE L. RICHARDS, M. D.

(*Published in full in* THE LARYNGOSCOPE, *September*, 1907, *page* 669.)

DISCUSSION.

DR. MAKUEN: About eighteen years ago, when I was a pupil of Dr. Cohen's, I started to write a paper on the removal of adenoids; and he said then that there was nothing especially new to say upon the subject, but even now it seems to possess great possibilities for discussion; and as the time is short, the Chair would request you to be as brief as possible. This does not apply to the first speaker, who, at the desire of Dr. Richards, will be Dr. Farlow.

DR. FARLOW: This subject has interested me for some time. In 1897, I showed in this very room, the instruments used in removing adenoids. It almost seems to me that, in order to cut off anything well, there should be a fixed point, or fulcrum; for you can do it better with something that holds and then cuts, than with an instrument that just cuts. The Gottstein curette simply cuts off, and the part of it farthest from the stock seems to deviate. The use of something like the guillotine, which holds and then cuts, is an ideal method. The disadvantage of the guillotine is in cases in

which we cannot see into the pharynx so as to know how large an instrument should be used; whether the growth has spread about; and whether it will fit that particular instrument. For that reason, it has always seemed to me, in contradistinction to what Dr. Richards has said, that it is adapted to growths that we can see, and not so well adapted to use in the cases of young children. In young children, the operation is done under complete anesthesia, in which case we can pass our finger in and tell where the growth is. There are very few as good as this for use when the patient is under local anesthesia. We can form an estimate of the size of the instrument; we can remove it with very little bleeding; and the discomfort is reduced to a minimum. It seems to me that this instrument has such a field of its own that there is no comparison with other forms of operating.

I have operated on some of the members of my own family, and have tried upon them different methods; and they have told me that this is as little painful as any, because the operation is done so quickly. One of these operations was done in such a smooth manner the patient did not spit out the piece afterward. It was done at a clinic; and a number of doctors, who had come to see me operate said: "You did not succeed, for you did not seem to get anything out." I looked into the throat and saw the growth in place, and I thought that my instrument must have slipped; but I passed a probe through the nose and dislodged the growth, and it came out all in one piece. The patient was not conscious that I had cut anything, and those present had seen no blood. What little blood there was had probably cemented the piece there, but there was very little bleeding after she had spit it out.

The use of the guillotine, seems to me an ideal method in proper cases, but I do not quite agree with Dr. Richards that it supplants other instruments for use in children under anesthesia. In other cases, however, it seems to me away ahead of them. The forms that have sometimes been made give the light from up above down, and do not fit in well; but some of these modifications are well adapted to the cases. It is very important to either feel with the finger or look in with the mirror, and see what the problem is.

DR. DELAVAN: As regards the sales, I think Dr. Richards has given a false impression. I have followed them for a number of years. I had nothing to do with the sales; my commission has, indeed, been unusually small; I only know that in talking to the

instrument-seller, he would tell me that he had sold a great many of them.

DR. RICHARDS: The instrument-sellers told me that they had sold very few.

DR. DELAVAN: My experience with the Schuetze instrument was not fortunate. I sent abroad for one about ten years ago, and attempted to use it on a child under complete anesthesia. The blade broke, the side-bar, which connected the blade with the main body of the instrument, having given way at its attachment; so I then had an inch of side-bar with the blade, constituting a slender object of steel with two arms at right angles to each other, which had become entangled in the adenoid at its thickest part, resisting the removal of the instrument. I found it very difficult to disentangle this foreign body. Had I been operating without complete anesthesia, I should have been in an awkward predicament. Fortunately, the foreign body finally came away.

One thing that renders this instrument objectionable is that the pharynx must fit the instrument. It is desirable that our instrument should adapt itself to the conformation of the pharynx. I do not believe that three sizes are enough to meet the indications for the different ages and sizes of the patients.

Regarding the Gottstein knife, we have other makers of knives much better. There is scarcely a good sample in Dr. Richards' whole outfit. The best modification of the Gottstein knife that I have been able to find is that made by Dr. Richard Frothingham, of New York. I have a set containing six different sizes. It is adapted to the conformation of the pharynx; it is perfectly shaped; and is far superior in every way to any of those passed around. I think it a great pity that this particular instrument has not been better recognized by the profession, for I feel sure that it would prove acceptable.

Regarding the palate retractor, our friend, Dr. Hooper, who was the man to introduce the method of operating under anesthesia in this country, uses a retractor of hard rubber, which is better in every respect than any metalic retractor ever made. If you have not tried it, I recommend it to you.

The subject of clearing out the fossa of Rosenmueller, I thought, had been exhausted long ago. Adhesions in this neighborhood and adenoid elements have a marked effect upon the Eustachian tube and the middle ear. The older otologists under whom I studied advocated this very strenuously, and have sent to me pa-

tients whose adenoids had been removed, leaving a fragment in the fossa of Rosenmueller; and whose ear-symptoms had not subsided. The removal of this fragment was followed by distinct relief.

DR. W. K. SIMPSON, New York City: I use Dr. Frothingham's curettes. They are by far the best shape of curette that I know of. He has modified them so that they fit admirably the various conditions in the nasopharynx. This is sometimes a matter of personal experience; but I think that, coming down to the forceps, which I prefer to the curette, the model made by Dr. Concannon are the best. It has a guard, so that one can do absolutely no damage with it. It also has the advantage of invariably taking out all the adenoid in toto. This permits one to show the growth to the parents of the child, which frequently cannot be done when the curette has been used.

DR. COFFIN: I think we are indebted to Dr. Richards for bringing this subject to our attention, for it makes us all think. His crows were all pretty black, and the rest are a little lame and limp. The success of an instrument largely depends upon "the man behind the gun" and his experience. Dr. Richards has shown some models that are very poor—instruments that he has discarded because of their liability to wound the Eustachian tube; but with his own instrument he can cut it right off, and it does no harm. The fact is that we all have our own particular methods and instruments, with which we can work best. Some of the instruments that Dr. Richards has condemned are poor models of good instruments put on the market by the designer. We all know that a man designs an instrument and takes great pains to see that it is properly made; but when it comes to be made by some other instrument-maker, its designer would not recognize it.

DR. SWAIN: In response to Dr. Farlow's suggestion, I bought a Schuetze guillotine. I liked it, for it did good work. It has lessened my general anesthesias by one-half, if not three-fourths. In quite young children, I have been able to get out a large mass readily with my finger.

Dr. Richards has done what I have delayed doing myself, and rigged a guillotine shorter in the shank. The limitations of the instrument are—and I have used it long enough to speak with authority—that when you have a central mass on two sides, you are liable to miss the side-strings from the main mass; and that you

often miss the part of the growth on the posterior wall, where the axis articulates together. There is no single instrument that has not its limitations, nor any in which the man that is accustomed to it cannot do better work with it than with an instrument that he does not understand so well. If you follow up the Schutze guillotine with a blade-currette, you can do the operation very nicely. It is not perfect, but it is a method worth considering.

Dr. Casselberry: I have been so unfortunate as not to have heard Dr. Richards's paper, but I have a word or two to say. I think I had made for me the first adenotome made in this country. The instrument was sold for quite a number of years by a Chicago house, but I never thought much of it, or used it very largely. The next instrument of this kind that came along was the Schuetze, and I did not think much more of it. It was narrow in its loop and obtuse in its curve, and was also too long in its shank. The next put on the market was the Gradle. In our part of the country this at once attracted attention as an instrument that would do, in my hands and those of my confrères, what neither my adenotome nor that of Schuetze could do; yet the Gradle instrument also has its limitations. I will not repeat those that Dr. Swain has mentioned, but I should like to add my voice in their favor. There is another limitation, which he has not mentioned, which has been the most difficult to correct. The Richards instrument may correct this defect. I do not know; for I have not used it and have not seen it. After the use of the adenotome I find, on examining afterward, that when I have removed what looked like a very satisfactory oval, correctly contoured adenoid in its entirety, and when I have also got the lateral parts—I have left a couple of pieces behind the posterior nasal openings, and have to make a supplemental operation of some sort, to get the openings as large as they should be. That is a necessary limitation of every adenotome that I have seen.

Dr. Richards: I have referred to that and shown how to obviate it.

Dr, Casselberry (continuing): Of course, the adenotome will do in connection with curettes. I am now using one that I have devised, but have not yet published. I have spent much labor on it, and would call it a modification of the Gradle, because it conforms to the acuteness of the Gradle curve. It does away with the cumbersome handle; and another great advantage that I find in it is for use in adults and adolescents—those that can sit in a chair and have

the operation done, in whom you can do what you have to do with a single stroke, and in whom you can make the operation fairly satisfactory without serious discomfort to the patient. I use it often, but do not consider it or any other adenotome an instrument of universal applicability.

DR. LELAND: I make a complete clearing-out of the fossa of Rosenmueller. You have to get the adenoids out of that, or there will be recurrent earache. When the adenoids are removed by a throat man there is often recurrent earache. Why is this? It is because the fossa of Rosenmueller is still filled, owing to the fact that we use the Gradle forceps larger than is necessary. We do not consider the bulging forward of the spinal column. When we use a small instrument we can get the first curve down straight and bring it down to the side of the mouth, where you wish to get it. You can then get the fossa of Rosenmueller cleaner. When you go in straight, you know where you are going—when you curve around you may cut off the Eustachian tube. The smaller Gradle sometimes used is the one to use, rather than a larger one that will fit the cases.

I want to speak of something that happened at the Pittsburg meeting, in 1893 or 1894: Dr. Roe was told by the President that anyone showing instruments before the Association must present them to him. I suppose this will not be enforced to-day.

DR. SWAIN: I want to testify that this law is still in existence, them to him. I suppose this will not be enforced to-day.

DR. MYLES: Dr. Richards's demonstration is timely. I have no doubt that, for a certain line of cases, this is an ideal instrument; but, as we are teachers to the general profession, as well as aiders to ourselves, I think that there are two ways of looking at it.

We ought to go on certain principles. If an adenoid is to be removed, should this be done by introducing an instrument into a blind cavity, without intelligence as to what the instrument is doing? Or should we direct the forefinger in there, and let it tell us? I am opposed to having anyone that has not thoroughly educated the tip of his finger introduce any cutting instrument without also introducing his finger.

On the other hand, this instrument is practically protective, providing the center axis of the instrument is kept in a line with the center of the head. I have tried this, and have shown how easy it is to remove unnecessary parts when this is not done. If kept in

the center line, it can do no harm. This is a great advantage to the man who has the elbow education, so to speak. One can tell when one has the Eustachian tube or any other part by the education of the arm, but I should not trust to this altogether. When using the forceps the average man should have his finger in at the same time. I do not see how anyone can attempt to remove tissue from the Eustachian tube without having his finger in.

About eight or ten years ago I presented before a society some specimens of synechiae of the vaginal process. I wonder whether they grew there normally, or were the results of adhesions. I have a good many specimens showing complete synechiae. There seems to be a union between the adenoid and certain things in the tube. It would appear to me that if we clear out the Rosenmueller fossa to the right depth we might prevent these adhesions. If we put two raw surfaces together we are almost certain to have adhesions. I have never removed the adhesions entirely, but have broken them loose in the deeper part. A great many cases have no adhesions at all.

This little part that the doctor has so well drawn, I have always had to put my finger in the nares and hold it there, until I cut it with the forceps. One little trick that helps us is that if the instrument is pushed to the back part of the septum, until it is driven firmly into the septum, you can get all out; but if the engagement is bad, you will have a chunk left to be removed later with the snare through the nose, or by means of the forceps.

I have used the Schuetze adenotome a number of times; but I finally gave it up, as I found that it had no special effect, except being a good instrument to use with young adults. When a little child is under an anesthetic, a specialist locates the adenoid and then slips in the instrument.

DR. MAKUEN: I regret that among all these beautiful instruments that are to be donated to the Association—

DR. RICHARDS: I cannot donate them. I do not own them.

DR. MAKUEN: I fail to find a modification of the Gottstein curette that was made for me fifteen or eighteen years ago. It was made with the thought in mind that Dr. Myles has just advanced. There are two modifications: one, this little moon-shaped excavation behind the blade, to enable the operator to get behind the growth; and the other, the little notch in the tip of the handle, which enables the operator to hold the instrument in the correct position, firmly against the posterior wall of the pharynx, so that it may be brought down

firmly through the growth without wabbling around in the hand, as it does when it is held as is a pen. If you get it firmly fixed in the fourchette of the hand, you can bring the adenoids out as perfectly and as whole as you can do it with any other instrument.

DR. RICHARDS (closing): I do not wish to be misunderstood. I do pay attention to the fossa of Rosenmueller. I have shown the curette and the original Hooper retractor. I merely mean that the present teaching is that everything must come out, so that a good many have torn out everything; and the adhesions that appear afterward are just as troublesome as those that have occurred before. In a great many cases in children the amount of adenoid tissue in the fossa of Rosenmueller is so small and pulpy that it can be removed with the finger.

With reference to Dr. Casselberry's remarks, I would say that I always carry something else with the instrument. If anything is left, you can use the curette. Before using this type of instrument at all, the finger should explore the growth. You can push the thing back and pick it up, so that it all engages in the fenestrum of the instrument.

I did not suppose that anyone would agree with me, but it is a good thing to take up these old subjects. I admit that the models are bad, but they are sold to someone, and the students are buying them. They are described in the text books, and they are going into some child's nasopharynx.

Straightening the Nasal Septum. By ARTHUR W. WATSON, M.D.

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DISCUSSION:

DR. BLISS: Since Dr. Watson reported this operation, it has been a favorite of mine, among the several forms of operation that I employ. I think that there is no one operation that we can rely on in every case. I can speak in the highest terms of the results that I and others have obtained from this operation, and I am glad Dr. Watson has brought it again before the society.

It seems to me that it is well for us not to forget the older methods of operating upon deflected nasal septa. The new operation of sub-mucous resection is being not to say overdone; but it is a fact that the younger men are using it to the neglect of many of the older and well-established methods which have been the product of long years of experience and an infinite number of satisfactory results. I do not want to say anything against the submucous operation, for

it applies to a certain class of cases; but for the angular deflections, Dr. Watson's operation is ideal. I do not thing it works in rounded deflection of the septum, which is without angles, so well as the Asch operation; but for the angular deflection, I do not think that any other can be so quickly done and is so satisfactory or permanent in its results. Dr. Watson's name alone should be associated with this operation, for I believe that he deserves the credit for devising it.

DR. MAYER: This operation has been confused with the name of another operation, and has gone by the name of both combined, more than with Dr. Watson's own name; although I have always felt that it was the Watson operation. I can commend it very highly. I recall very well his first description of it before this Association, and I frequently perform it, especially in young children. I know of no form so well adapted to the deformities of the cartilaginous septum as that described by Dr. Watson.

I should like to lay stress upon one point in the operation, and that is the freshening of the edges of the floor on the concave side, after having performed the operation on the convex side. I find that having freshened the edges has given a double opportunity for holding the part pushed over into the concavity. In packing, having in mind the suffering that the patient must experience in having the nose packed with solid gauze for four weeks, I use a piece of rubber tubing, which helps to keep the part well over, if it properly fits the nose.

The operation described by Dr. Watson has not been forgotten. When we sift the matter we shall find that there is no single operation that is going to answer all purposes, and that for the deformities or the conditions that follow accident, and for the relief of external deformity, even more than of obstructed breathing, operations of this character will be done for time immemorial.

DR. CASSELBERRY: I want to know whether Dr. Watson cannot devise, in connection with this operation, some method of doing at the same time as the main operation what he sometimes seems to have to do afterwards. He tells us that if there is a sufficient thickening along the long part of the horizontal cut to protrude into the nostril of the convex side after the healing, it has to be taken off, as a spur would. This means operation No. 2 for the patient. I have to apologize when I have to do a second operation, especially in children. It would seem that Dr. Watson's operation would be ideal, if he could do it at one sitting.

It is a very useful operation. I have had frequent opportunity to test it. I had occasion last year to testify to its usefulness in children under general anesthesia. It can be done quickly, efficiently, and without difficulty. I prefer to operate on children under general anesthesia.

As I remember the operation, which has come down to us with a hyphenated name, the incisions went all the way through the septum—through the muco-perichondrium of the concave side. I have done it without going all the way through. Now, I understand, Dr. Watson goes through only one side.

DR. WATSON: By preference I do so; but sometimes it is not possible.

DR. CASSELBERRY: My difficulty was that when I wanted to go through only one side I could not make the fragments lock. I had to go a little further back. I extended my incision with a saw, in order to get far enough back to make it lock.

DR. BALLENGER: I wish to speak favorably of this operation. I have often performed it in years past, and had the pleasure of performing it only a week ago, with satisfactory results. My name has become connected with the submucous operation through the accidental invention of a little instrument, and the impression might be that I am wedded to that operation to the exclusion of all others. I am not. I have frequently performed the Watson operation, the Ash operation, the Kyle operation, and others; and I think that in the near future I shall probably do a larger proportion of these operations than I have in the past.

When one takes up a new operation one tries it in all sorts of cases. I have probably used the submucous resection in cases in which in future I shall perform the others. I think with Dr. Watson that when we can save the framework of the septum it is best to do so. I had a slight sinking-in of the nose about two months after a submucous resection, not having made due allowance for the chondritis that undoubtedly followed the injury. In the class of cases described by Dr. Watson his operation is a very desirable one, and one that should be chosen for the purpose. I simply wanted to place myself in the proper light before the Association, and not be misunderstood—although I do not know that I have been at all—as to my position on the subject.

DR. MYLES: I have never exactly understood from the history of this operation that it was the Watson operation. Probably Dr. Watson will explain it to us. My understanding was that Dr. Wat-

son never cut through the mucous membrane on the other side. Dr. Gleason always did. There was a great difference between the two procedures. Dr. Asch's operation, also, was always confined to the cartilaginous septum. Those that use his operation perform another, in addition; that is, breaking up the bony septum.

In 1896 I read a paper on the Sub-Perichondrial Operations of the Nasal Cartilage, in which I described certain results. As long as I confined myself to the cartilaginous septum I had no trouble, but as soon as I tried to perform a bony operation in connection with it I got myself into difficulties. In two cases that will be reported by friends of mine there were deaths following the submucous operation. The deeper the operation on this bony septum the more serious it becomes.

A thing that bothers me very much is the perpendicular plate of the ethmoid, which is a difficult bone to manage. I have had to remove up to the cribriform plate, near the nasal bones, and divide the plate of the ethmoid; and I have always felt apprehension in such cases. In olden times, in doing that which I was trying to get by the internal route, I sawed and drilled it off. Even then I was apprehensive. When one considers that the meninges of the brain depend through the cribriform plate down on the middle turbinal, we must be apprehensive in such circumstances. Does Dr Watson perform his operation on the cribriform plate of the ethmoid in such a manner as to relieve this apprehension? His operations are ideal in certain cases.

We have so many instances in which we have to do a series of operations that it would be well if we could do these two at once. In order to clear the field thoroughly, it frequently happens that we should not attempt to do too much at one time; so we do three or four operations, instead of one.

Dr. Cohen: I have a great predilection for this operation, from which I have seen most excellent results. Dr. Gleason's operation includes a vertical incision behind, and in front a longer one, which makes it a more extensive one; then he puts in his finger and forcibly breaks the bone. I have seen serious cerebral trouble follow that procedure. When it did happen it gave a great deal of anxiety. Reference has not been made before in the discussion to the difference between the Watson and the Gleason operation. What is called the Gleason-Watson operation includes the additional vertical incision behind, and a large vertical incision in front, so that the cut has a squared "U" shape.

DR. B. ALEXANDER RANDALL: If it is permissible for a visitor to venture a word, I think that there is a point that has great bearing upon this subject; and that is the marvelously straight piece of the septal cartilage that we obtain after removing what was a markedly angulated cartilaginous portion. As soon as we have stripped off its mucous membrane, the cartilage straightens itself in a marvelously satisfactory manner.

The operation as now presented by Dr. Watson, in laying stress upon the carrying out of the procedure without perforation of the mucous membrane upon the concave side, is virtually a submucous operation on that side; since there must be a considerable detachment of coverings, so that the part shall slip over.

As I have understood the Gleason operation as contrasted with the Watson, Gleason is particular that there be a horse-shoe largely vertical, behind and in front of the deviation, to overcome the resilience. He also rather avoids getting the flange, which is the pride of the Watson operation. If this point of the relatively submucous work of the Watson operation is borne in mind, we shall see why it is as satisfactory as it is.

DR. WATSON (closing): In answer to Dr. Mayer, in regard to freshening the concave side, I would say that I think that is a pretty good idea. Not cutting the mucous membrane of the concave side, however, accomplishes the same result. When the parts are pushed over, the muco-periosteum is stripped up from the base, allowing the cartilage of the other side to fall down between it and the cartilage of the base. That denudes that portion and makes it adhere again. This is one advantage of not cutting the mucous membrane, and another is that it keeps the other nostril free from blood. If there is any danger of a perforation following, this is also obviated largely by this mucous membrane's being left intact.

I think that Dr. Cohen or some other speaker spoke of the Gleason method of doing this operation, mentioning the fact that it cuts the mucous membrane on the other side. I always used to cut it through at first, and did not think of saving the mucous membrane on the concave side. This is a refinement of the operation, but I do not insist upon it. It makes a nicer operation.

Dr. Casselberry spoke of the spur removal. When I first did the work I removed the spur at the same time; and I sometimes do this still, when it is marked and constitutes a thick mass extending into the other nostril. Occasionally you will find a case in which you are undecided as to how far to go, and in such cases it is better to

let it remain and do the operation, if necessary, later. Sometimes it rounds itself off in healing, and it is not necessary to do another operation. In the thinner deflection, in which we have the hardest time to make the overlap stay overlapped, breaking the lower portion of the septum which is left and straightening it up will obviate the difficulty. It removes the projecting portion and increases the lapping of the parts.

DR. MAKUEN: Why not remove the spur before the operation?

DR. WATSON: Because we want to utilize all the straight part of the septum. It is practically straight down to the angle, and all below is bone, at the suture between the vomer, the triangular cartilage, and the perpendicular plate of the ethmoid. We get the cartilage just above the bone, and do not have to use the saw. Occasionally there is a spicule of bone. The saw does not leave a good operation, because it goes through in a straight line, and one cannot make the proper curve underneath the overhang.

Dr. Mayer spoke about packing. I have used all kinds of splints and packing—the rubber-tubing, the gutta-percha molding, hard-rubber splints, etc. The latter are not made for the particular nose upon which you are working, and are sometimes too large in front and too narrow behind. Therefore I prefer the gauze. I do not find it at all disagreeable to the patient—not so much so as a hard dressing. It slips in and out easily, and can be greased after the first dressing. It does not have to be tight. In the cases in which the results are the most successful there is no necessity for any packing. There is a danger that the patient may blow his nose and produce hemorrhage. I put the gauze in partly to avoid this danger. Otherwise, in most cases the parts will stay in position by themselves.

Dr. Myles spoke of the perpendicular plate of the ethmoid. These are the cases that I excepted from this operation. I do not know of any better way to remove the deflection than to cut away the curved bone by the submucous operation.

Dr. Randall has said that Dr. Gleason, in doing the operation, does not make a bevel. He does not do this intentionally, but he does do so; in sawing up he makes the bevel. He came to me after he had published his article and acknowledged that it was the same operation as mine, with no difference so far as the principle goes—the principle of overlapping and the beveled incision. I should have had no objection to his claiming all that is his own. Most of it is mine, however; and he knew my operation before he ever

thought of his. That is why I objected. I want mine to stand on its own merits, and I want credit for that part which is mine: anyone else can have the rest that wants it.

Local Anaesthesia in Operations on the Maxillary Sinus. By GORDON KING, M. D.

The author finds the use of a general anaesthetic in operations about the antrum not only a source of unnecessary risk to the patient, but a most annoying hindrance to clean and rapid execution of the operative procedure. In performing the radical Caldwell-Luc operation on the maxillary sinus practically complete anaesthesia can be obtained in every detail of the operation by the judicious use of cocaine and adrenalin, and with such rapidity as to enable the operator to finish the operation within twenty minutes. With a general anaesthetic much delay and inconvenience is caused by the flow of the buccal secretions and blood, and by the occupation of the operative field by the anaesthetist's cone.

An important point in the technic is the injection of the anaesthetic mixture into or around the trunk of the infra-orbital nerve, which insures analgesia of almost the entire field of operation.

Within the past two years the author has employed this method exclusively, and finds it safe and satisfactory from every point of view. A. A.

DISCUSSION.

DR. MYLES: In the last fifteen or twenty years I have operated in two hundred cases on the antrum of Highmore, and in the series of cases operated on eight or ten years ago I do not think that more than two per cent. of the operations were done under general anesthesia. All the rest were done by the local method. I used a two to a four per cent. solution then, but I have gradually diminished the strength until I have got it down to one-eighth or one-tenth per cent. The mucous membrane was thoroughly anesthetized with the cocaine and adrenalin, and this makes the operation practically painless, unless you get near some dental nerve. I have tried some cases with water, and the result seems to be good. This is due to the pressure of the water on the nerves.

Within the last few years I have done not more than ten per cent. of operations through the canine fossa; the others I have done through the inferior nasal. In that class of cases we use the light platinum needle introduced under the inferior turbinal, or after a section of it has been taken off. It is well to introduce the cocaine

and adrenalin into the small hole in the antrum, for the most pain is in the antral mucosa. It is remarkable what an anesthetic condition is produced by so weak a solution; but even with the strong solutions I have never noticed much constitutional effect. There is a great deal in the method employed. I do not believe in putting cocaine on a region upon which I do not intend to operate. To spray it on the nose diffusely, or where it will discharge into the nose, will produce a much worse constitutional reaction with a weak solution than would be produced by using a strong solution on a small swab, and not letting it flow out upon other spots. It should be held in the proper place with a small pledget of cotton.

So far, I have nothing to regret in the use of local anesthesia. I am a sort of chronic "knocker" on the question of the death rate from general anesthesia. Since I have belonged to the brotherhood I have been able to get more evidence of this than can be obtained from the papers. If you have once lost a patient in this way, your friends are willing to tell you about those that they have lost, and it is surprising to find how many there are. Within the last few weeks a friend of mine had a very sad case of the kind. It is not right to blame the result upon the anesthetist, for it is due to the operation. When you take the responsibility of ordering the giving of a general anesthetic you must take the responsibility of the death. The anesthetist is doing what he does under your direction, and the responsibility for the result must be assumed by you.

Dr. Casselberry: From a limited experience with the radical operation through the canine fossa I can testify to the efficiency of local anesthesia. I have done the operation through the canine fossa under local anesthesia but once, and that was in the case of an old man to whom I hesitated to give a general anesthetic. It, however, took me considerably longer than Dr. King has stated, probably because I am not so experienced with the local anesthesia method as he is. The anesthesia was satisfactory in every respect, except in the curetting of the interior of the cavity, which was painful to the patient, notwithstanding the efforts I made to apply the cocaine within the cavity. I do not think of making any effort to inject the cocaine into the region of the infra-orbital nerve, but I have no doubt that this would be a very useful addition to the procedure. I shall adopt it in future if I have occasion to do so.

Dr. Bliss: I should like to ask Dr. Myles whether that fatal case afer general anesthesia occurred after the use of ether or of chloroform. I have been very much impressed by his statement. It is

astonishing how very rarely any of us have untoward experiences after the use of ether. I should be very much pleased to have him tell us what anesthetic was employed.

DR. MYLES: I was not present at the operation. One instance was a case in which I was consulted. The patient died a day or so after the operation, and I was informed of it. The other instance was very recent, and my friend just told me that the patient had died after the operation. I did not ask particularly concerning the details of the administration of the anesthetic.

DR. KING (closing): I should merely like to emphasize one point about this method. Not only is it a question of getting thoroughly efficient anesthesia by means of cocaine, but the use of a local anesthetic also facilitates the operation. The greatest obstacle in doing these operations about the mouth with a general anesthetic is the secretion, especially creating the necessity of repeatedly cleaning out the throat. The wound is constantly reinfected by the secretions. This is obviated by the use of local anesthesia.

As to the time of the operation, which Dr. Casselberry spoke of, I find that I can do it in half the time that it would take under general anesthesia, because it does not take so long to give cocaine, and the rest of the operation can be done without stopping for further anesthesia—except in the interior of the cavity, which is the most sensitive point. If you begin by making a little opening it is not painful at all. Then, before you begin to open it up largely you can inject a ten per cent. solution of cocaine. By the time you have it thoroughly opened the part is pretty well anesthetized. If not, swab in a stronger solution on the interior surface of the cavity.

Myxofibroma of the Naso-Pharynx, Causing Disfigurement. Report of a Case and Exhibition of Specimen. By D. BRADEN KYLE, M.D.

The common site of origin of Myxofibroma of the naso-pharynx is from the basilar process of the occipital bone. It may extend upward or downward and the rate of growth varies. The symptoms vary according to the direction of the extension.

Dr. Kyle reported a case and exhibited the specimen removed. The growth in this case was pedunculated, and had its origin at the posterior end of and underneath the right superior turbinate body. It had extended chiefly in the right nares, completely blocking it and by deflection of the bony septum to the left it occluded the left nostril also. Removal of the growth was almost without hemor-

rhage, and was followed by complete recovery, six weeks after operation the nose appearing about normal.

DISCUSSION.

DR. FARLOW: One symptom that occurred in a patient of mine, and did not occur in Dr. Kyle's patient, is extreme change in the voice. My patient was a man nearly sixty years of age. I inquired his name, which he said was Mr. Batson, and I wrote it down that way. He saw me do it, but made no remark. I found his postnasal space filled up with a growth, which was larger than the one from Dr. Kyle's case. I had considerable difficulty in removing it. I could not get it out with a snare, but had to use the forceps. I pulled the tumor down, got hold of the pedicle, and cut it off that way.

As soon as it was over, the man said: "You remember that you wrote my name down as Batson. My name is Matson. I have had this trouble two or three years, and since it began I have moved to another place. Where I formerly lived everyybody knew me as Matson; but where I now reside they all call me Batson. When letters for me come addressed to Mr. Matson, the postoffice authorities do not know whom they are for." I was greatly surprised to find that, although there was still great weakness, the character of the voice changed immediately after the operation.

DR. WATSON: Ten years ago I had a case like this, except that the growth was more extensive. It hung down from the nasopharynx, and when it was removed the body of the growth from the pharynx measured about six inches in circumference. It also involved both sides of the septum, and extended into the antrum on one side. It was producing some protrusion of the face on that side. The interesting part of this case is the treatment.

First, I removed with the snare the large mass that filled the nasopharynx. Then the entire vault of the pharynx was found to be covered with this filth. I tried to strip it off with the tearing forceps, but was unable to tear away only a small piece at a time. As fast as I cleared it away it was reproduced, and it continued to increase until I began to use the electric needles, one in front of and one behind the growth. I did this two or three times a week for four weeks, and then the patient went home. After a month or two he came back, and I found that the growth had diminished. I gave him another treatment, and he later wrote me that he could breathe freely, and that the mass had gone down on the side of his face. I presume he is well now, as I have not heard from him since.

DR. KING: I simply want to mention a case of myxofibroma removed recently. A tumor about the size of a large pigeon egg had made considerable deformity of the face, and when it had been removed I found it to have been attached by a pedicle to the alae of the nose.

DR. LINCOLN: I recently saw a case similar to Dr. Kyle's in hospital work, and I wish to bring out the point that all cases are not so favorable in regard to blood-vessel distribution. In mine, adhesions had taken place all over, and operation by means of intranasal snares and forceps was impossible. I had to remove the nose from the face and lay it over on one side, which permitted of a free access to the tumor. The adhesions had to be separated with the spatula, and the cautery had to be used. It required a great deal of packing. I was glad that, in removing the nose, I had cut in upon the surface of the sound side, for when it was replaced upon the face the inevitable suppuration did not come through my wound, but was discharged into the pharynx. The tumor was not entirely removed in the nasopharynx, but it afterward yielded to treatment with the electric needle.

DR. SWAIN: How firm was the tumor? It seems unusual to have deformity from such a soft tumor as a myxofibroma.

DR. MACKENZIE: Some years ago, at the University of Maryland, I had a large fibroma of the larynx, which seemed to be rooted almost everywhere. I attempted to remove it with the cold wire snare, but broke three snares in the attempt. I broke practically every instrument I had, and finally decided to pass it over to the Professor of Surgery. I did so, and he did a modified Langenbeck, dissecting the growth out in that way. It was found that it would have been absolutely impossible to have removed it through the internal route. A very large artery was severed, and blood spurted all over the table, but the hemorrhage was finally controlled.

This case proves the truth of what Dr. Lincoln has said, that these growths are sometimes impossible to remove through the internal passages, because they are rooted in so many places. If I had severed this artery in removing the growth, and had had the serious hemorrhage that followed, it would hardly have been possible to have controlled it.

DR. CASSELBERRY: I wish to call attention to the fact that the discussion seems to have embraced two classes of growth: those we have heard about from the last speaker belong to the class of nasopharyngeal fibroma, and those concerning which the paper was writ-

ten are the myxofibromata, which dip into the nasopharynx. The two conditions should not be confused, because the treatment of one is entirely different from that of the other.

DR. MACKENZIE: I stated that my case was a pure fibroma.

DR. KYLE (closing): I did not refer particularly to the change of voice, but merely referred to it as the typical nasal twang.

In regard to the point made by Dr. Swain, these tumors are certainly very soft; and it has also puzzled me why such soft masses could cause so much bony displacement. Myxofibromata are not very vascular. There was practically no hemorrhage in this case. The patient made a good recovery, but whether there will be any return I cannot say, as it has scarcely been six months since I removed the tumor. I have frequently removed larger growths from the nasopharynx, but the fact that this soft growth grew forward, causing bony displacement and external deformity, was rather unique.

A Case of Epithelioma of the Tongue; Operation; Recovery. By ROBERT C. MYLES, M. D.

The case reported was of a man, aged 64, with a cancerous growth about one inch in diameter on the left side of the tongue. Before operation iodide was exhibited, eighty grains three times daily for three weeks, without effect. At the operation the superficial and deep cervical glands and the submaxillary salivary and lymphatic glands were first removed and much of the connective tissue along the jugular vein and carotid arteries was excised. Then the tumor was removed with a margin of healthy tissue from one-half to one inch in all directions.

The microscopic diagnosis was of a squamous-celled carcinoma in early stage.

DISCUSSION.

DR. BRYAN: I have been very much interested in malignant disease of the tongue, since I have had some very unfortunate cases. I reported two cases that have turned out badly, and a brief history of them may not be out of order.

In one I discovered on the lateral border of the tongue an ulceration that had been in existence six months. All the doctors that had been consulted had considered it a stomach ulcer. The disease, however, had shown no tendency to subside, and I recognized the condition and sent the patient to London. There Mr. Butlin removed half the tongue and part of the floor of the mouth, and three

weeks afterward the cervical glands on the affected side. There was no glandular enlargement perceptible by palpitation at the time of the operation on the tongue, and no enlargement was evident microscopically in the glands of the affected side after their removal.

The patient returned to this country, and did very well until the first of last March, when he discovered a small enlargement on the opposite side of the neck. Within two weeks after this there was a very rapid development. Dr. Kerr, who was called in, did a complete operation, and found an enormous mass at the junction of the carotid on the opposite side. The carotid and the jugular were thoroughly imbedded and had to be excised. The man died of pneumonia forty-eight hours after the operation.

The second case was one in which the growth was at the base of the tongue, and was operated on by the Kocher method. Recurrence took place six or eight months afterwards.

I have recently had a third case operated on, and the patient is now doing as well as possible in the circumstances.

Regarding early diagnosis, it seems to me that the fate of the patients depends upon the early recognition of the disease. The cases should be recognized in the precancerous stage. Is there such a stage? Must we operate before we are convinced that the disease is malignant? I do not believe that we can ever say that a patient is cured of malignant disease occurring in the upper air passages of the tongue until three or four years have passed since the operation.

Why the disease should occur on the opposite side is evident from the anatomy of the tongue. It is rich in lymphatics, the circulation of which the raphe is not sufficient to shut off. In discussing the case with Mr. Butlin, he said that the glands on both sides ought to be excised, and that was also the opinion of Prof. Kocher. The case operated on in England did so well that we felt that the man would survive. The patient recently operated on by Dr. Finney is, I believe, also doomed.

DR. SOLIS COHEN: There is a difference in the management of these cases. Some operators remove the glands at the time of removing the tongue, and others wait for two or more weeks afterward, or till cicatrization has taken place.

DR. MACKENZIE: It is growing more evident to the surgeons in Baltimore that, in order to complete the tongue operation, the whole floor of the mouth must be excised.

DR. BRYAN: Mr. Butlin removed the whole floor of the mouth, deep down into the larynx.

DR. GEORGE E. SHAMBAUGH: I had a case of cancer of the neck that seems to me to have been rather unusual. I think that the development of the tongue explains and clears it up. The anterior part of the tongue develops in halves, whereas the back part develops as a central piece.

DR. MYLES (closing): I believe that my case should have been operated on ten weeks before. Even if we have it ourselves, it is hard to get the idea into the minds of the patients that an excision should be performed at once. If we could do this we could more frequently report a cure.

Dr. Bryan has made the point of whether the pathologist is able to find evidence of the presence of malignant disease early enough to enable us to operate with the hope of cure. It seems to me that the microscopic evidence is there, and that the pathologist ought to increase his knowledge regarding incipient cancerous growth. There must be a precancerous stage, and what are its characteristics? I have asked a number of pathologists, and none of them seemed to know. One said that he thought I had had unlimited bravery to do that operation with the little evidence of malignancy that I had. The general appearance of the growth led me to believe it to be malignant. This did not consist so much in ulceration as in a peculiar hardness, which did not yield to the iodide.

I am not in favor of taking out pieces for microscopic examination. In this case the pathologist examined thirty sections before he obtained the necessary evidence. It is, however, a complete and perfect demonstration of the character of the growth. The man certainly would have lost his life. I do not say that he is cured now. The question is, can we help a few patients to get well? If we can cure a few, we shall feel encouraged to operate on others.

(Proceedings of the American Laryngological Association to be Continued.)